Aspire T650/E500
AcerPower F5
Service Guide

Service guide files and updates are available on the AIPG/CSD web; for more information, please refer to http://csd.acer.com.tw

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Revision History

Please refer to the table below for the updates made on Aspire T650/E500 and AcerPower F5 service guide.

Date	Chapter	Updates

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Conventions

The following conventions are used in this manual:

SCREEN MESSAGES	Denotes actual messages that appear on screen.
NOTE	Gives bits and pieces of additional information related to the current topic.
WARNING	Alerts you to any damage that might result from doing or not doing specific actions.
CAUTION	Gives precautionary measures to avoid possible hardware or software problems.
IMPORTANT	Reminds you to do specific actions relevant to the accomplishment of procedures.

Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for Acer's "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.
2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

Chapter 1 System Specifications.....1
Overview 1
Features 4
Block Diagram 7
MainBoard Placement 8
Rear I/O Port 10
Jumper and Connector Setting 11
Connector Information 12
Aspire T650 Front Panel 17
Aspire E500 Front Pane 18
AcerPower F5 Front Panel 19
Aspire T650/E500, AcerPower F5 Rear Panel 20
System Peripherals 21
Acer eRecovery 23
Acer disc-to-disc recovery 25
Hardware Specifications and Configurations 26
Power Management Function (ACPI support function) 33
Chapter 2 System Utilities.....35
Entering Setup 36
Product Information 37
Standard CMOS Features 38
Primary IDE Master 40
Advanced BIOS Features 41
Advanced Chipset Features 43
Integrated Peripherals 44
Power Management Setup 46
PnP/PCI Configuration 48
PC Health Status 49
Frequency Control 50
Load Default Settings 51
Set Supervisor/User Password 52
Save & Exit Setup 53
Exit Without Saving 54
Chapter 3 Machine Disassembly and Replacement.....55
General Information 56
Disassembly Procedure 57
Aspire T650 Standard Disassembly Procedure 58
Aspire T650 Standard Reassembly Procedure 66
Aspire E500 Standard Disassembly Procedure 75
Aspire E500 Standard Reassembly Procedure 83
AcerPower F5 Standard Disassembly Procedure 92
AcerPower F5 Standard Reassembly Procedure 100
Chapter 4 FRU(Field Replaceable Unit) List.....109
Aspire E500/T650 Exploded Diagram 110
AcerPower F5 Exploded Diagram 112

System Specifications

Overview

All the new Socket-T motherboards come with a socket protector that has to be removed before you fit the CPU. This is to prevent damage to the pins inside the CPU socket before the chip is inserted. The new CPU socket is known as Socket-T and the new processors will be of LGA775 type. LGA stands forLand Grid Array and means that there are no pins on the bottom of the CPU, although there are still contact surfaces - no less 775 of them. The CPU interface has been moved to the mainboard socket and this is a way for Intel to get fewer returns in terms of damaged CPUs due to bent or broken pins.

These two models (Aspire T650/E500 & AcerPower F5) use ATI on die VGA chipset to address the overall platform graphic performance. We provide the most time-to-market specification:

- Support Intel 775 pin mainstream CPU up to P4 4.0Ghz/FSB 800
- On board ATI VGA performed great graphic power than previous AGP 8X
- Add-On PCI-Express VGA card provides extra graphic solution for extensive gamers
- DDR II memory with dual channel provides faster processing speed and efficiency

Aspire T650/E500 will be the product name for consumer market. AcerPower F5 will be the product name for commercial market. Please refer below table for more details address toward each chipset that be used in this project : (It's only for reference as guideline)

Chipset	General Features
ATI RC410 Express chipset	❑ 64-bit single-channel DDR/DDR2 SDRAM interface ❑ SUpports one PCI Express x16 for Graphics Interface, fully compliant to the PCI Express Base Specification revision 1.0a ❑ Full support for 3D primitive, Direct3D texture lighting, and OpenGL format for Indirect Vertices in Vertex Walker ❑ Full DirectX 9.0 support(Vertex Shader version 2.0 and Pixel shader version 2.0)

Chipset	General Features
ULI M1573	❑ Provides a High Integration Bridge ❑ One EHCI USB 2.0 and three OHCI USB 1.1 Host Controllers for supporting up to eight USB ports ❑ Supports HS (480Mbits/sec), FS (12Mbits/sec) and LS (1.5Mbits/sec) data transfer rate ❑ Provides High Definition(HD) Audio/AC'97 2.3 compliant digital controller interface for third parties (such as the AMC Codec's vendor) to enable the software modem solution ❑ Provides 1/10/100 Mbps Medium Access Control (MAC) controller for the best solution of the phone-line/ Ethernet LAN connectivity ❑ Supports SATA 1.0 (High Speed Serialized AT Attachment, Revision 1.0a), 1.5 Gb/s data rate
REALTEK ALC880 Controller	❑ High-performance DACs with 100dB S/N ratio ❑ ADCs with S/N ratio greater than 85dB ❑ 8 DAC channels support 16/20/24-bit PCM format for 7.1 audio solution ❑ Supports 44.1K/48K/86K/192KHz DAC sample rate ❑ All ADCs support 44.1K/48K/96K sample rate ❑ -64dB ~ +30dB with 1dB resolution of mixer gain to achieve finer volume control ❑ Emulation of 26 sound environments to enhance gaming experience ❑ 10 Software Equalizer Bands
Marvell 8EE8001 GigaLAN	❑ Integrated 10/100/1000 transceiver ❑ Wake-on-LAN and remote wake-up support ❑ Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab ❑ Supports IEEE 802.1Q VLAN tagging
ITE IT8712 Controller	❑ Supports up to 1/240 duty cycle ❑ Provides 320 LCD drive circuits ❑ Provides 2.6 to 5.5V LCD drive voltage ❑ Provides 2.5 to 5.5V operating voltage ❑ Provides 4-bit or 8-bit parallel data input ❑ Supports screen display off function ❑ Supports the automatic generation of chip enable sign ❑ Supports Power standby function ❑ Package : Flex-TCP /can also be shipped in CHI (433 bumps) ❑ Maximum shirt clock frequency : 6.5 MHz (VCC=3V)/8 MHz (VCC=5V) ❑ Two output modes are selectable : 320 output mode/ 240 output mode

Remark: ULI M1573 (for reference)

The M1573 integrates a High Definition (HD) Audio/AC'97 Host Controller, 2-channel dedicated Ultra-66/100/133 IDE Master controller, SATA Host Controller (4 SATA ports that can support SATA RAID 0,1,0+1) supporting Native Command Queue, USB 2.0/1.1 Host controllers, IO APIC controller, as well as 1/10/100 Mb/s Fast Ethernet MAC layer and PCI Express interface.

Of most interest in the HD Audio feature, which is an Intel Azalia Compliant Audio Solution. Azalia is the next generation of onboard audio, and is very advanced. Essentially, it provides superior Audio Onboard, negating the need for an expensive 3rd party audio card. (copyright by **OCW**)

Features

CPU

- Socket Type : Intel Socket T
- Supports Intel Pentium D FSB 800MHZ
- Supports Intel Pentium 4 Prescott 775 / FSB 533/800MHz
- Supports Intel Celeron Prescott 775 / FSB 533MHz
- Pentium 4 2.66GHz ~3.8GHz speed
- Celeron D2.80GHz ~ 3.06GHz
- L2 Cache varies with CPU from 1MB to 2MB (for 6xx series CPU)

Chipset

- Northbridge: ATI RC410
- Southbridge: ULI M1573

Memory

- Socket Type : DDR II,1.8 Voltage
- Socket Quantity : 2
- Capacity support : 256MB ~ 2GB
- Support Memory Speed : 400/533 MHz

Graphic Solution

- ATI RC410 on-die graphic solution
- PCI-E x16 VGA Add-On Card

Slots

- 1 PCI Express x16 slot
- 1 PCI Express x1 slot
- 2 PCI 2.3 5V slots

FDD

- One 1.44MB 3.5” device

IDE

- Slot Type : 40pin PATA IDE slot
- Slot Quantity : 2
- Transfer rate support PIO mode 0 (3.33MB/s) /1 (5.22MB/s) /2 (8.33MB/s) /3 (11.1MB/s) / 4 (16.7MB/s)
- ATA mode : 33/66/100/133
- Device Type Support : HDD/CD-ROM/DVD-ROM/Combo/DVD burner
- Connector Type : SATA IDE Connector
- Connector Quantity : 2
- Storage Type Support : HDD

Audio

- Codec : Realtek ALC880 (HD Codec)
- One UAJ (Universal Audio Jack) support (rear only)

Remark UAJ : UAJ not only provides the ideal solution for multi-media and also user-friendliness for audio speaker installation.

- 5.1 Channel Audio Support
- Reserved disable function on BIOS side. Default is enabled.

LAN

- Controller : ULI M1573 compatible
- LAN Chip : Marvell 8EE8001
- Should be worked under 10/100/1000 Mbs environment
- Reserved disabled function on both hardware & BIOS side. Default is enabled

USB

- Controller : ULI M1573 compatible
- Connectors Quantity : 8 (four on rear connector, four on-board header)
- 2 for front daughter board (Pin:2*5 Intel FPIO)
- 1 for Multi-Media card reader (Pin : 1*5)
- USB 2.0/1.1

System LED Definition

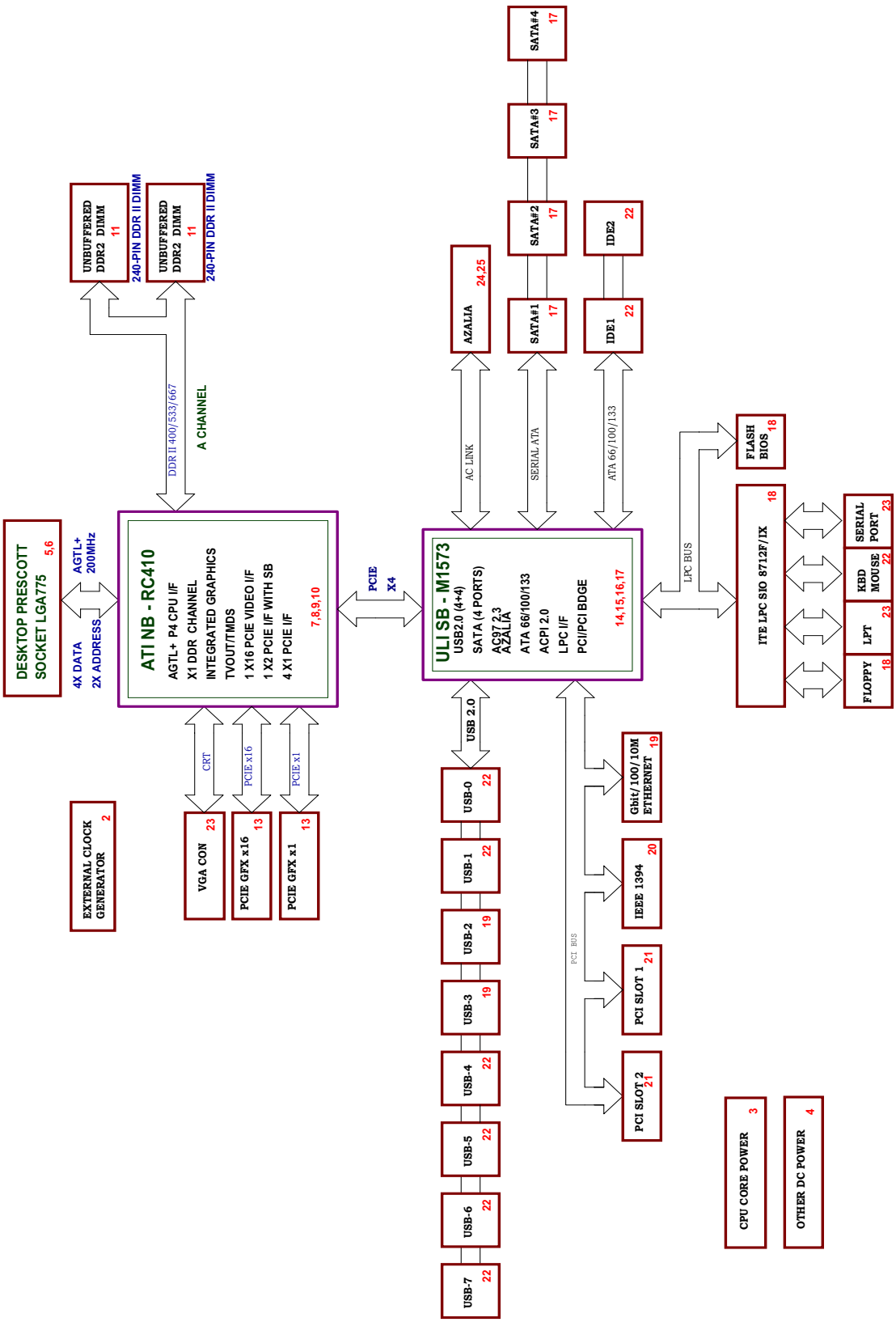
LED Item	Color
Power state LED	
S0	Green Steady
S1/S3	Amber Steady
S4/S5	Off
HDD state LED	
IDE active	Green Blinking
IDE idle	Off
LAN state LED	
LAN active	Green Blinking
LAN idle	Off

On-Board Connector

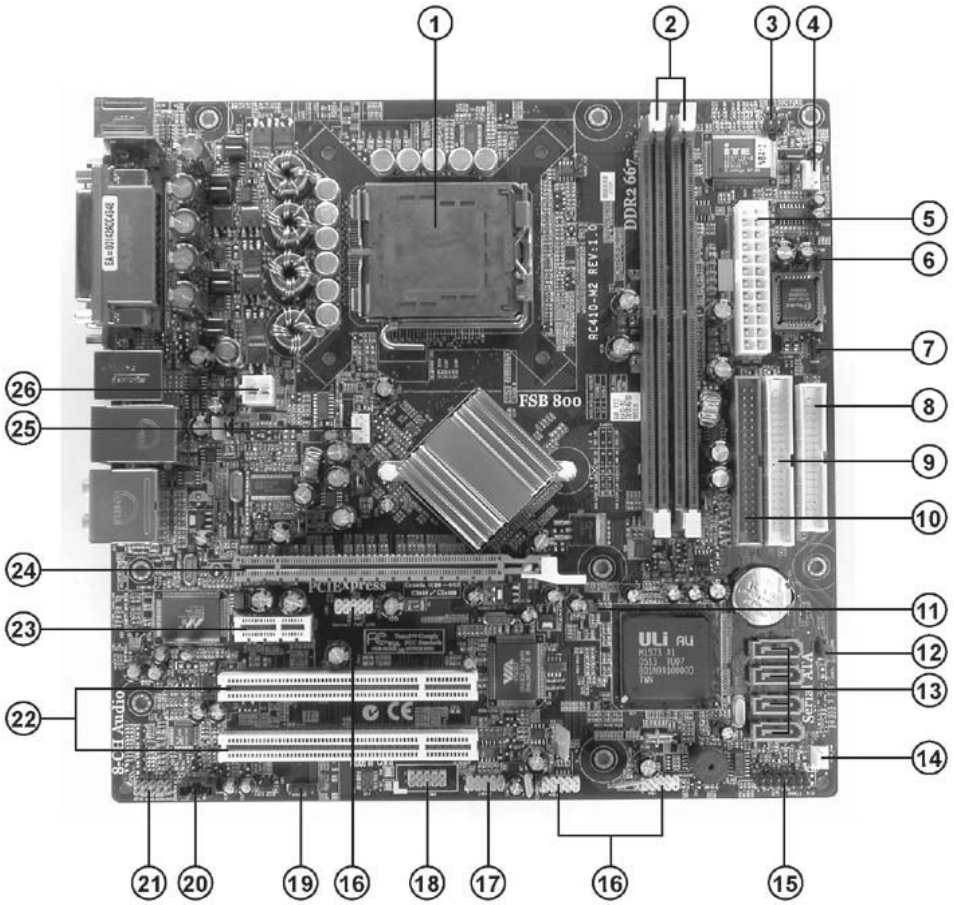
- Rear I/O Connectors
  - 1 PS/2 Keyboard Port, 1 PS/2 Mouse Port
  - 1 Parallel Port, 1 Serial Port
  - 1 VGA Port
  - 1 GigaLAN Port
  - 4 USB Ports
  - 6 Ports Jack Support HD (High Definition) Audio Output
  - 1 IEEE 1394 port

- On-Board Connectors
  - 1 CPU Socket
  - 2 Memory Socket
  - 1 PCI Express x1 Slot
  - 1 PCI Express x16 Slot
  - 2 PCI Slots
  - 1 FDD Slot
  - 2 PATA IDE Slots
  - 2 SATA IDE Slots
  - 1 2*5 pin Intel FPIO sepecification USB pin connectors
  - 3 1*5 pin USB pin connector
  - 1 2nd serial port
  - 1 CD-In 4pin connector (CD-ROM Audio Input)
  - 1 3/4 pin CPU Fan connector
  - 1 3 pin System FAN connectors
  - 1 24pin/4pin ATX interface PS3/PS2 SPS connector
  - 1 2*4pin Intel FPIO specification Power Switch/Power State LED/HDD active LED
  - 1 2 pin LAN activity monitor connector
  - 2 reserved 2pin GPIO connector
  - Color management for on board connector

Block Diagram



MainBoard Placement



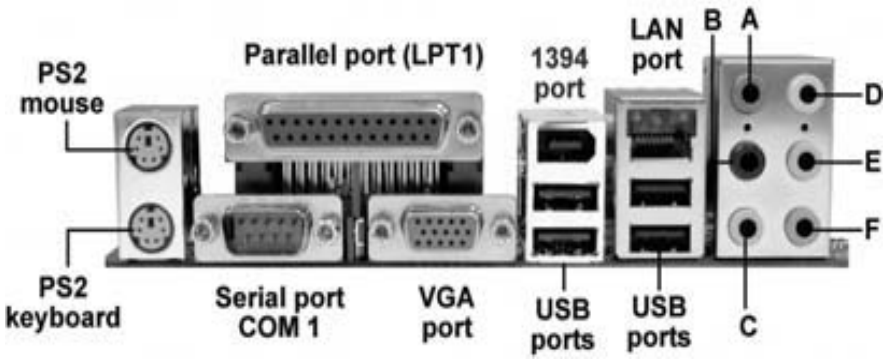
Mainboard Items

Item	Label	Description
1	CPU Socket	LGA775 socket for Pentium 4 CPUs
2	DIMM1,2	240-pin DDR2 SDRAM slots
3	IR1	Infrared header
4	CPU_FAN	CPU cooling fan connector
5	ATX_POWER	Standard 24-pin ATX power connector
6	BIOS_TBL	BIOS Prevent header
7	BIOS_WP	BIOS protection jumper
8	FDD	Floppy diskette drive connector
9	IDE2	Secondary IDE channel
10	IDE1	Primary IDE channel
11	TBD	TBD
12	CLR_CMOS	Clear CMOS jumper
13	SATA1~4	Serial ATA connectors
14	CASE_FAN	Case cooling fan connector

Mainboard Items

Item	Label	Description
15	PANEL1	Front panel switch/LED header
16	USB3,4	Front Panel USB header
17	1394A2	Onboard 1394a header (optional)
18	COM2	Onboard serial port header
19	SPDIFO1	SPDIF out header
20	CD_IN	Analog audio input connector
21	AUDIO1	Front panel audio header
22	PCI1~2	32-bit add-on card slots
23	PCIE1	PCI Express x1 slot
24	PCIEX16	PCI Express x16 graphics card slot
25	SYS_FAN	System cooling fan connector
26	ATX12V	4-pin +12V power connector

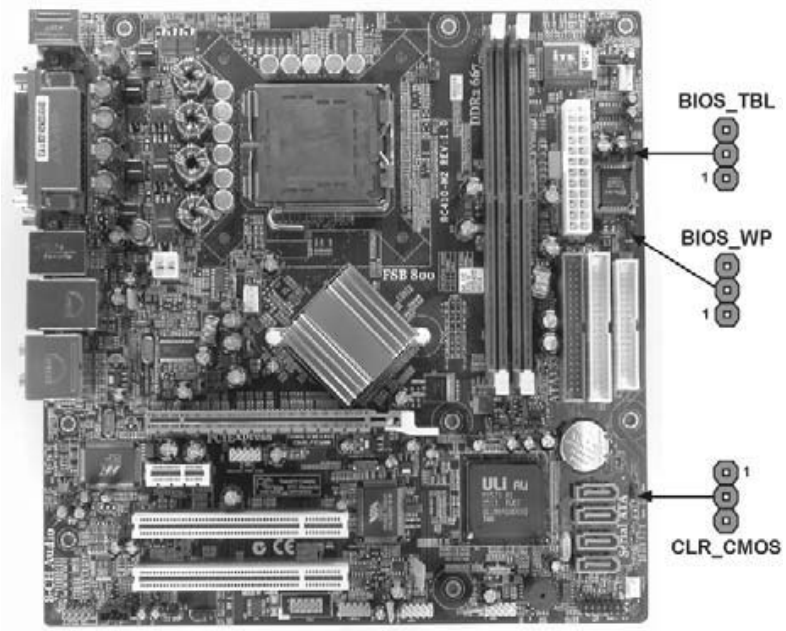
Rear I/O Port



Item	Description
PS/2 Keyboard and PS/2 Mouse Connector	To install a PS/2 port keyboard and mouse, plug the mouse to the upper port (green) and the keyboard to the ower port (purple).
Parallel Port(LPT1)	The parallel port allows connection of a printer, scanner and other peripheral devices.
Serial Port(COM1)	Connects to serial-based mouse or data processing devices.
VGA Port	Monitor can be connected to VGA port.
USB Ports	Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker...etc. have a standard USB interface. Also make sure your OS supports USB controller. If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.
LAN Port	The provided Internet connection is Gigabit Ethernet, providing data transfer speeds of 10/100/1000Mbps.
1394a Port	Use the 1394a port to connect andy 1394a device
Audio Ports	Use the audio jacks to connect audio devices. The D port is for stereo line-in signal, while the F port is for microphone in signal. This motherboard supports 8-channel audio devices that correspond to the A, B, C, and E port respectively. In addition, all of the 3 ports, B, C, and E provide users with both right&left channels individually. Users please refer to the following note for specific port function definition. A: Center&Woofer B: Back Surround C: Side Surround D: Line-in E: Front Out F: Mic-in Rear **NOTE:** The above port definition can be changed to audio input or audio output by changing the driver utility setting.

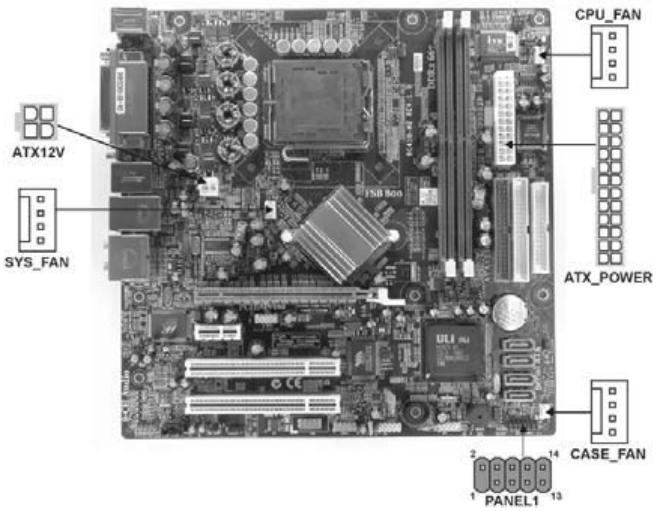
Jumper and Connector Setting

Jumper Setting

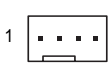
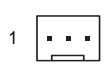


Jumper	Type	Description	Setting
CLR_CMOS	3-pin	CLEAR CMOS	1-2: Normal 2-3: Clear CMOS Before clearing the CMOS, make sure to turn off the system.
BIOS_WP	3-pin	BIOS PROTECT	1-2: DISABLE 2-3: ENABLE
BIOS_TBL	3-pin	BIOS PREVENT	1-2: DISABLE 2-3: ENABLE

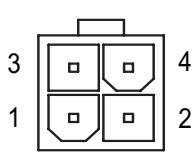
Connector Information



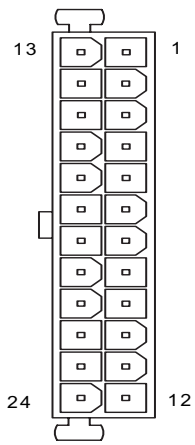
CPU_FAN/SYS_FAN/CASE FAN

Illustration	Pin No.	Definition
 CPU_FAN  SYS_FAN	1	GND
	2	+12V
	3	Sense
	4	Speed Control (Only for CPU Fan)

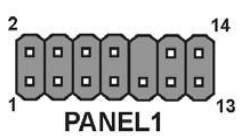
ATX12V

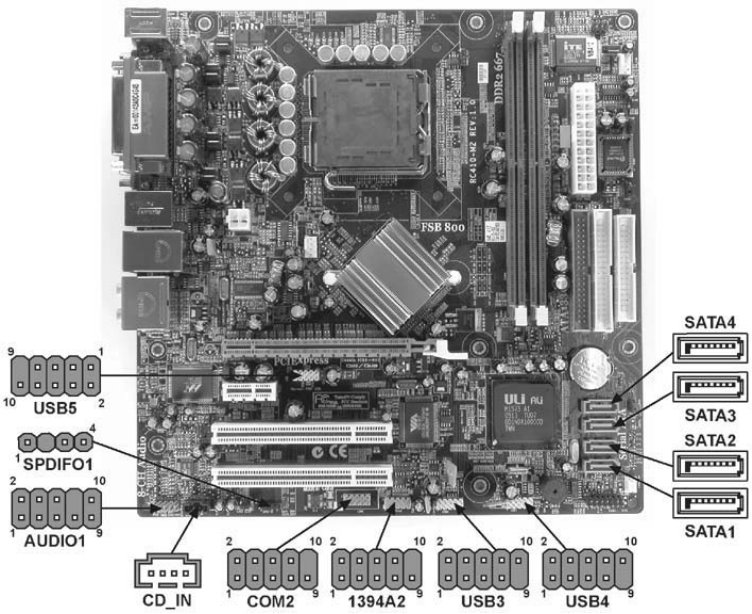
Illustrator	PIN No.	Definition
	1	GND
	2	GND
	3	+12V
	4	+12V

ATX Power

Illustration	PIN No.	Definition	PIN No.	Definition
	1	3.3V	13	3.3V
	2	3.3V	14	-12V
	3	GND	15	GND
	4	+5V	16	PS_ON(soft On/Off)
	5	GND	17	GND
	6	+5V	18	GND
	7	GND	19	GND
	8	Power Good	20	-5V
	9	5V SB(stand by +5V)	21	+5V
	10	+12V	22	+5V
	11	+12V	23	+5V
	12	3.3V(Only for 24pins ATX)	24	GND

ATX Power

Illustration	PIN No.	Definition	PIN No.	Definition
	1	Hard disk LED(+)	8	Power Switch(-)
	2	MSG LED(+)	9	Reserved
	3	Hard disk LED(-)	10	Key
	4	MSG LED(-)	11	ODD LED(+)
	5	Reset Switch(-)	12	LAN LED
	6	Power Switch(+)	13	ODD LED(-)
	7	Reset Switch(+)	14	LAN LED(-)



Audio1:Front Panel Audio Header

Pin No.	Definition
1	PORT-FL
2	GND
3	PORT-FR
4	ACZ-DET
5	PORT-ER
6	AGND
7	SENSE B
8	NO PIN
9	PORT-EL
10	GND

SATA1/2/3/4: Serial ATA connectors

Pin No.	Definition
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

SPDIFO1:SPDIF out header

Pin No.	Definition
1	5V analog power
2	No pin
3	SPDIF digital output
4	Ground

1394A2: Onboard IEEE 1394a headers(optional)

Pin No.	Definition
1	TPA+
2	TPA-
3	GND
4	GND
5	TPB+
6	TPB-
7	Cable-Power
8	Cable-Power
9	Key Pin
10	GND

USB3/4: Front Panel USB header

Pin No.	Defintion
1	Power
2	Power
3	USB_FP_P0-
4	USB_FP_P1-
5	USB_FP_P0+
6	USB_FP_P1+
7	GND
8	GND
9	No Pin
10	USB_FP_OC0 （Overcurrent signal）

COM2: Onboard serial port header(optional)

Pin	Signal Name	Definition
1	NDCDB	Data carry detect
2	NSINB	Serial Data In
3	NSOUTB	Serial Data Out
4	NDTRB	Data terminal ready
5	GND	Ground
6	NDSRB	Date set ready

COM2: Onboard serial port header(optional)

Pin	Signal Name	Definition
7	NRTSB	Request to send
8	NCTSB	Clear
9	NRIB	Ring Indicator
10	KEY	Key

CD_IN: Analog audio input header

Pin	Signal Name	Definition
1	CD in_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD in_R	CD In right channel

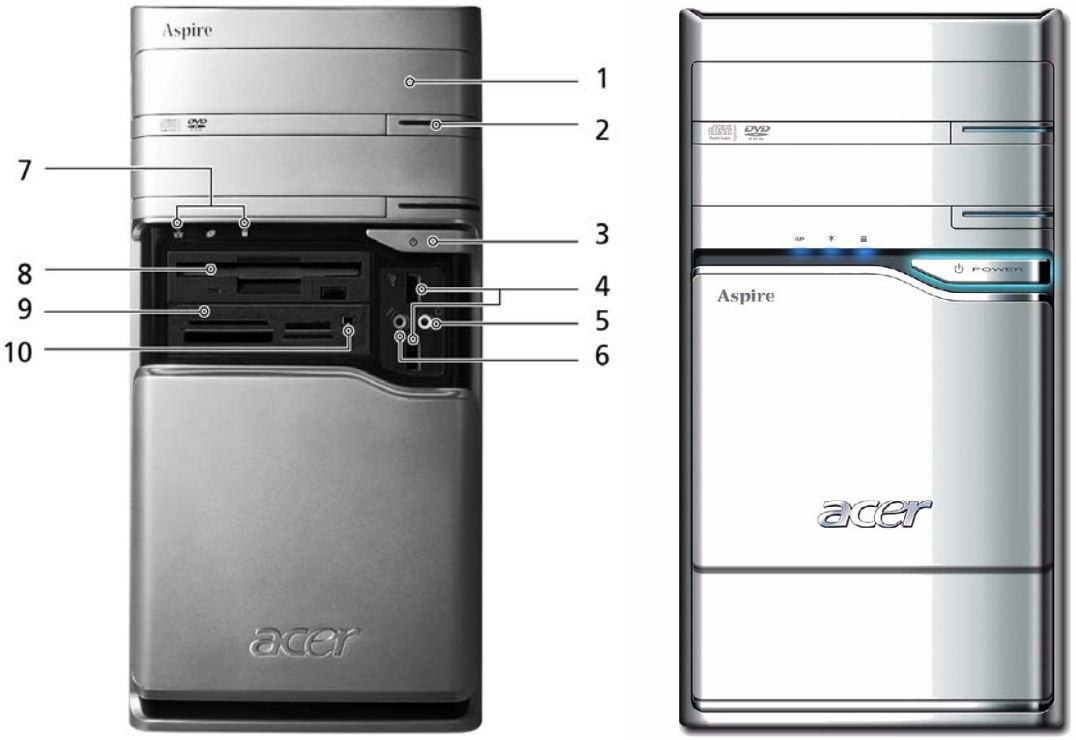
IR1: Infrared port

Pin	Signal Name	Definition
1	NC	Not connected
2	Key	No pin
3	+5V	IR Power
4	GND	Ground
5	IRTX	IrDA serial output
6	IRRX	IrDA serial input

Aspire T650 Front Panel

No.	Description	No.	Description
1	Optical Device	2	Floppy drive
3	Power Button	4	Microphone Jack
5	Speaker/Headphone Jjack	6	USB Ports

Aspire E500 Front Panel



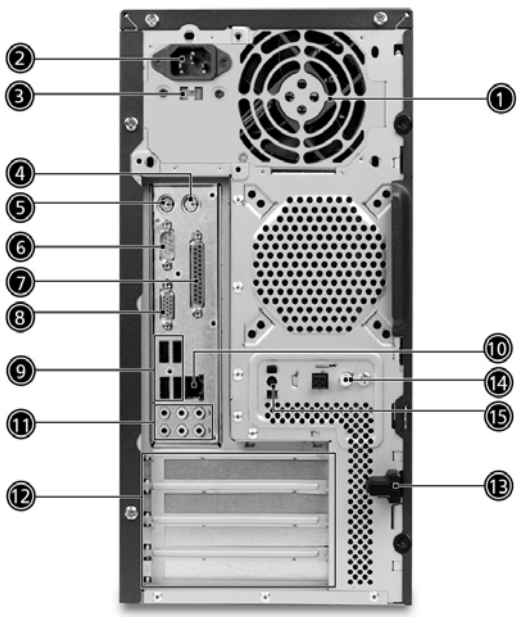
No.	Description	No.	Description
1	Optical Driver	2	Optical Drive Eject Button
3	Power Button	4	USB Ports
5	Speaker/Headphone Jack	6	Microphone-in Jack
7	Indicators	8	Floppy Disk Drive
9	Card Reader	10	IEEE 1394 Port

NOTE: The picture left is the front bezel with middle cover slided down.

AcerPower F5 Front Panel

No.	Description	No.	Description
1	Optical Drive	2	Floppy Disk Drive
3	Card Reader	4	Indicators
5	USB Ports	6	Microphone-inJack
7	Speaker/HeadphoneJack	8	Power Button

Aspire T650/E500, AcerPower F5 Rear Panel



No.	Description	No.	Description
1	Power Supply	2	Power Cord Socket
3	Voltage Select Switch	4	PS/2 Mouse Port
5	PS/2 Keyboard Port	6	Serial Port
7	Printer Port	8	Monitor Connector
9	USB Ports	10	RJ45 port
11	Audio Jack	12	Expansion Slots
13	Chassis Lock Pad	14	SPDIF port
15	N/A		

NOTE: The IEEE 1394 port is an optional item.

System Peripherals

The Aspire T630 and AcerPower F3 computer consist of the system itself, and system peripherals, like a mouse, keyboard and a set of speakers (optional). This section provides a brief description of the basic system peripherals.

Mouse (PS/2 or USB, manufacturing option)

The included mouse is a standard two-button wheel mouse. Connect the mouse to the PS/2 mouse port or USB port on the back panel of the system.

Keyboard (PS/2 or USB, manufacturing option)

Connect the keyboard to the PS/2 keyboard port or USB port on the back panel of the system.

Speakers

For systems bundled with speakers, before powering on the system, connect the speaker cable to the audio out (external speaker) port on the back panel of the system.

For more detailed information about the speakers, please refer to the included operating instructions.

NOTE: speakers are optional and the appearance might be different depending on the actual product.

Acer eRecovery

Acer eRecovery is a tool to quickly backup and restore the system. Users can create and save a backup of the current system configuration to hard drive, CD, or DVD.

Acer eRecovery consists of the following functions:

1. Create backup
2. Restore from backup
3. Create factory default image CD
4. Re-install bundled software without CD
5. Change Acer eRecovery password

Create backup

Users can create and save backup images to hard drive, CD, or DVD.

1. Boot to Windows XP
2. Press **<Alt>+<F10>** to open the Acer eRecovery utility.
3. Enter the password to proceed. The default password is six zeros.
4. In the Acer eRecovery window, select **Recovery settings** and click **Next**
5. In the Recovery settings window, select **Backup snapshot image** and click **Next**.
6. Select the backup method.
   - ❑ Use **Backup to HDD** to store the backup disc image on drive D:.
   - ❑ **Backup to optical device** to store the backup disc image on CD or DVD (only available on systems that include an optical disc burner).
7. After choosing the backup method, click **Next**.

Follow the instruction on screen to complete the process.

Restore from backup

Users can restore backup previously created (as stated in the **Create backup** section) from hard drive, CD, or DVD.

1. Boot to Windows XP.
2. Press **<Alt>+<F10>** to open the Acer eRecovery utility.
3. Enter the password to proceed. The default password is six zeros.
4. In the Acer eRecovery window, select **Recovery actions** and click **Next**.
5. Select the desired restore action and follow the onscreen instructions to complete the restore process.

Create factory default image CD

When the System CD and Recovery CD are not available, you can create them by using this feature.

1. Boot to Windows XP.
2. Press **<Alt>+<F10>** to open the Acer eRecovery utility.
3. Enter the password to proceed. The default password is six zeros.
4. In the Acer eRecovery window, select **Recovery settings** and click **Next**.
5. In the Recovery settings window, select **Burn image to disc** and click **Next**.
6. In the Burn image to disc window, select **01. Factory default image** and click **Next**.

7. Follow the instructions on screen to complete the process.

Re-install bundled software without CD

Acer eRecovery stores pre-loaded software internally for easy driver and application re-installation.

1. Boot to Windows XP.
2. Press **<Alt>+<F10>** to open the Acer eRecovery utility.
3. Enter the password to proceed. The default password is six zeros.
4. In the Acer eRecovery window, select Recovery actions and click **Next**.
5. In the Recovery settings window, select **Reinstall applications/drivers** and click **Next**.
6. Select the desired driver/application and follow the instructions on screen to re-install.

At first launch, Acer eRecovery prepares all the needed software and may take few seconds to bring up the software content window.

Change Password

Acer eRecovery and Acer disc-to-disc recovery are protected by a password that can be changed by the user. Follow the steps below to change the password in Acer eRecovery.

1. Boot to Windows XP.
2. Press **<Alt>+<F10>** to open the Acer eRecovery utility.
3. Enter the password to proceed. The default password is six zeros.
4. In the Acer eRecovery window, select **Recovery settings** and click **Next**.
5. In the Recovery settings window, select **Password**: **Change Acer eRecovery password** and click **Next**.
6. Follow the instructions on screen to complete the process.

Acer disc-to-disc recovery

Restore without a Recovery CD

This recovery process helps you restore the C: drive with the original software content that is installed when you purchase your notebook. Follow the steps below to rebuild your C: drive. (Your C: drive will be reformatted and all data will be erased.) It is important to back up all data files before you use this option.

1. Restart the system.
2. While the Acer logo is showing, press <Alt>+<F10> at the same time to enter the recovery process.
3. The message "The system has password protection. Please enter 000000:" is displayed.
4. Enter six zeros and continue.
5. The Acer Recovery main page appears.
6. Use the arrow keys to scroll through the items (operating system versions) and press <Enter> to select.

Multilingual operating system installation

Follow the instructions to choose the operating system and language you prefer when you first power-on the system.

1. Turn on the system.
2. Acer's multilingual operating system selection menu will pop-up automatically.
3. Use the arrow keys to scroll to the language version you want. Press <Enter> to confirm your selection.
4. The operating system and language you choose now will be the only option for future recovery operations.
5. The system will install the operating system and language you choose.

System Board Major Chip

Item	Specification
System Core Logic	ATI RC410 ULI M1573
Super I/O Controller	ITE 8712
LAN Controller	Marvell 8EE8001
Memory Controller	Build in ATI RC410
E-IDE Controller	Build in ULI M1573
RJ45 Controller	RTL 8110S
Audio Controller	ULI M1573
VGA Controller	ATI RC410
Keyboard Controller	ITE 8712

Processor

Item	Specification
Type	Intel Pentium 4 processor 775 Land Grid Array(LGA)
Slot	Socket-T (LGA 775)
Speed	Depends on CPU, which is local configured
Bus Frequency	533/800 MHz
Voltage	Processor voltage can be detected by any system without setting any jumper

BIOS

Item	Specification
BIOS code programmer	AMI
BIOS version	R01-A0
BIOS ROM size	4MB
BIOS ROM package	32-pin PLCC package
Support protocol	PCIX 1.0,PCI 2.2,APM 1.2,VESA/DPMS (VBE/PM V1.1), SMBIOS 2.3, E-IDE 1.1, ACPI 1.0b,ESCD1.03, PnP 1.0a, Bootable CD-ROM 1.0, USB 1.1~ USB 2.0, UHCI 1.0, ANSI ATA 3.0 ATAPI
Boot from CD-ROM feature	Yes
Support to LS-120 drive	Yes
Support to BIOS boot block feature	Yes
BIOS Password Control	Yes

BIOS Hotkey List

Hotkey	Function	Description
DEL	Enter BIOS Setup Utility	Press while the system is booting to enter BIOS Setup Utility.

System Memory

Item	Specification
Memory Slot Number	2 Slots
Supported Memory Size per Slot	256 MB ~ 1GB
Supported Maximum Memory Size	2GB
Supported Memory Speed	400/533/667 MHz
Supported memory voltage	1.8 V
Support memory module package	240-pin DIMM
Support to parity check feature	Yes
Support to Error Correction Code (ECC) feature	Yes
Memory module combinations	You can install memory modules in any combination as long as they match the above specifications.

VRM (Voltage Regulator Module)

Function	VRM Specification	Typical Voltage	Power Source	Maximum Output
CPU VRM	VRM10.1	0.8375~1.6v	12 Voltage	101A
CPU VRM	VRM 9.0	1.1-1.85 Voltage	12 Voltage	70A

Cache Memory

Item	Specification
First-Level Cache Configurations	
Cache function control	Enable/Disable by BIOS Setup
Second-Level Cache Configurations The information below is only applicable to system installed with a Pentium 4 processor	
Tag RAM Location	On Processor
L2 Cache RAM Location	On Processor
L2 Cache RAM type	PBSRAM (Pipelined-burst Synchronous RAM)
L2 Cache RAM size	Depends on CPU, which is local configured
L2 Cache RAM speed	Full of the processor core clock frequency (Advanced Transfer Cache)
L2 Cache function control	Enable/Disable by BIOS Setup
L2 Cache scheme	Fixed in write-back

LAN Interface

Item	Specification
LAN Controller	Marvell 8EE8001 GigaLAN Controllers
LAN Controller Resident Bus	PCI Bus
LAN Port	ONE RJ-45 on board
Function Control	Enable/Disable by BIOS Setup

IDE Interface

Item	Specification
IDE Controller	Built-in ULi M1573
IDE Controller Resident Bus	PCI bus
Number 40 pin PATA slot	2
❑ Device Type Support	HDD, CD-ROM, CD-RW, DVD-ROM,Combo,DVD burner
❑ Transfer Rate Support	PIO 0/1/2/3/4
❑ ATA Mode	33/66/100/133
Number STAT IDE slot	2
❑ Device Type Support	HDD
Supports LS-120	Yes
Supports bootable CD-ROM	Yes
Function Control	Enable/Disable by BIOS setup

Diskette Drive Interface

Item	Specification
Diskette Drive Controller	ULi M1573
Diskette Drive Controller Resident Bus	LPC Bus
Supported Diskette Drive Formats	1.44MB, 2.88MB format and slim type diskette drive
Function Control	Enable/Disable by BIOS Setup

Serial Port

Item	Specification
Serial port controller	Build-in ITE 8712
Serial port controller resident bus	LPC Bus
Number of serial port	1
Serial port location	Rear Panel
16550 UART support	Yes
Connector type	9-pin D-type female connector
Optional serial port I/O address (via BIOS Setup)	3F8h 2F8h 3E8h 2E8h
Optional serial port IRQ (via BIOS Setup)	IRQ4 IRQ3

USB Port

Item	Specification
Universal HCI	USB 2.0/1.1
Controller	ULi M1573
Number of the connectors	8

USB Port

Item	Specification
Location	Rear : 4 On-board header : 4
USB Class	Support legacy keyboard for legacy mode

Wake-up Event Specifications

Device	S1	S3	S4	S5
Power Button	Enabled	Enabled	Enabled	Enabled
PS2 Keyboard	Enabled	Disabled	Enabled	Enabled
USB Keyboard	Enabled	Enabled	Disabled	Enabled
LAN	Disabled	Disabled	Disabled	Disabled
WOR (wake on Ring)	Disabled	Disabled	Disabled	Disabled
RTC (real time clock)	Disabled	Disabled	Disabled	Disabled

Thermal Design

Item	Description
Thermal Design	❑ Dynamic FAN speed control by hardware monitor ❑ CPU Over-temperature (over 120^{O}C) power off protection.

Power On / Wake-up Event

Item	Description
Power On/ Wake-Up Event	❑ Power Button: S1/S3/S4/S5 ❑ PS/2 Keyboard: S1/S3/S4/S5 ❑ USB Keyboard: S1/S3/S4/S5 ❑ RTC: S1/S5 ❑ LAN: S1/S3/S5 ❑ Modem (Ring): S1/S3/S5

Memory Address Map

Address	Size	Function
0000000 - 009FFFF	640 KB System Memory	Onboard DRAM
00A0000-00BFFFF	128 KB Video RAM	Reserved for Graphics Display Buffer Non-Cacheable
00C0000-00CFFFF	32 KB I/O Expansion ROM	Reserved for ROM on I/O Adapters
00D0000-00D3FFF	16 KB I/O Expansion ROM	Reserved for ROM on I/O Adapters
00D4000-00D7FFF	16 KB I/O Expansion ROM	Reserved for ROM on I/O Adapters

Memory Address Map

Address	Size	Function
00D8000-00DBFFF	16 KB I/O Expansion ROM	Reserved for ROM on I/O Adapters
00DC000-00DFFFF	16 KB I/O Expansion ROM	Reserved for ROM on I/O Adapters
00E0000-00E7FFF	32 KB for SCSI BIOS	Reserved for SCSI BIOS
00E8000-00EFFFF	32 KB	Reserved Onboard
00F0000-00FFFFF	64 KB BIOS	System ROM BIOS (ROM) System RAM BIOS (DRAM)
0100000-0F9FFFF	System Memory	Onboard DRAM
0FA0000-0FFFFFF	384 KB I/O Card Memory	Reserved for Memory Map I/O Card Non-Cacheable
1000000-FFFFFFF	System Memory	Onboard DRAM

PCI INTx# and IDSEL Assignment Map

PCI INTx #	PCI Devices	Device IDSEL: ADxx
INTA#	ADIMM-slot	N
INTB#	PCI-Slot1	AD16
INTC#	PCI-Slot2	AD17

I/O Address Map

Hex Range	*Devices*
000-01F	DMA Controller-1
020-021	Interrupt Controller-1
040-043	System Timer
060-060	Keyboard Controller 8742
061-061	System Speaker
070-071	CMOS RAM Address and Real Time Clock
080-08F	DMA Page Register
0A0-0A1	Interrupt Controller-2
0C0-0DF	DMA Controller-2
0F0-0FF	Math Co-Processor
170-177	Secondary IDE
1F0-1F7	Primary IDE
278-27F	Parallel Printer Port 2
2F8-2FF	Serial Asynchronous Port 2
378-37F	Parallel Printer Port 1
3F0-3F5	Floppy Disk Controller
3F6-3F6	Secondary IDE
3F7-3F7	Primary IDE
3F8-3FF	Serial Asynchronous Port 1
0CF8	Configuration Address Register
0CFC	Configuration Data Register
778-77A	Parallel Printer Port 1

IRQ Assignment Map

IRQx	System Devices	Add-On-Card Devices
IRQ0	Timer	N
IRQ1	Keyboard	N
IRQ2	Reserved	N
IRQ3	Serial Port 2	Reserved
IRQ4	Serial Port 1	Reserved
IRQ5	Reserved	Reserved
IRQ6	Floppy Disk	Reserved
IRQ7	Parallel Port	Reserved
IRQ8	Real Time Clock	N
IRQ9	N	Reserved
IRQ10	N	Reserved
IRQ11	N	Reserved
IRQ12	PS/2 Mouse	Reserved
IRQ13	Numeric Processor	N
IRQ14	Embedded Hard Disk	Reserved
IRQ15	Reserved	Reserved

NOTE: N - Not be used

DRQ Assignment Map

DRQx	System Devices	Add-On-Card Devices
DRQ0	N	Reserved
DRQ1	N	Reserved
DRQ2	FDD	N
DRQ3	N	Reserved
DRQ4	Cascade	N
DRQ5	N	Reserved
DRQ6	N	Reserved
DRQ7	N	Reserved

NOTE: N - Not be used

Environmental Requirements

Item	Specifications
Temperature	
Operating	+5°C ~ +35°C
Non-operating	-20 ~ +60°C (Storage package), -10°C~+60°C (un-package)
Humidity	
Operating	15% to 80% RH, non-condensing
Non-operating	10% to 90% RH, non-condensing at 40°C
Vibration	
Operating (unpacked)	5 ~ 500Hz, 2.20g RMS random,10 minutes per axis in all 3 axes
Non-operating (packed)	5 ~ 500Hz, 1.09g RMS random,1 hour per axis in all 3 axes
Shock Operating	Half sine, 2g 11m seconds

Drop Test

Drop Test				
Definition	The protection ability of packing & cushion must be capable of withstanding, with no physical or functional demage, mechanical impact from height-specific drops.			
Test Standard				
Package Cross Weight		**Drop Height**		**Not of Drop**
KGs	lbs	CM	Inch	
0~9.1	0~20	76	30	10
9.1~18.2	20~40	61	24	10
18.2~27.3	40~60	46	18	10
27.3~45.4	60~100	31	12	10
10 drops : one corner, three edges, six surfaces				

Power Management Function (ACPI support function)

Device Standby Mode

- Independent power management timer for hard disk drive devices (0-15 minutes, time step=1 minute).
- Hard disk drive goes into Standby mode (for ATA standard interface).
- Disable V-sync to control the VESA DPMS monitor.
- Resume method: device activated (Keyboard for DOS, keyboard & mouse for Windows).
- Resume recovery time: 3-5 sec.

Global Standby Mode

- Global power management timer (2-120 minutes, time step=10 minute).
- Hard disk drive goes into Standby mode (for ATA standard interface).
- Disable H-sync and V-sync signals to control the VESA DPMS monitor.
- Resume method: Return to original state by pushing external switch button, modem ring in, keyboard and mouse for APM mode.
- Resume recovery time: 7-10 sec.

Suspend Mode

- Independent power management timer (2-120 minutes, time step=10 minutes) or pushing external switch button.
- CPU goes into SMM.
- CPU asserts STPCLK# and goes into the Stop Grant State.
- LED on the panel turns amber colour.
- Hard disk drive goes into SLEEP mode (for ATA standard interface).
- Disable H-sync and V-sync signals to control the VESA DPMS monitor.
- Ultra I/O and VGA chip go into power saving mode.
- Resume method: Return to original state by pushing external switch button, modem ring in, keyboard and mouse for APM mode.
- Return to original state by pushing external switch button, modem ring in and USB keyboard for ACPI mode.

ACPI

- ACPI specification 1.0b.
- S0, S1, S3 and S5 sleep state support.
- On board device power management support.
- On board device configuration support.

System Utilities

BIOS (Basic Input and Output System) includes a CMOS SETUP utility which allows user to configure required setting or to active certain system features.

The CMOS SETUP saves the configuration in the CMOS SRAM of the mainboard. When the power is turned off, the battery on the mainboard supplies the necessary power to the CMOS SRAM.

When the power is turned on, pushing the <Del> button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen. You can enter the BIOS setup screen by pressing “Ctrl+F1”. When setting up BIOS for the first time, it is recommended that you save the current BIOS to a disk in the event that BIOS needs to be reset to its original settings.

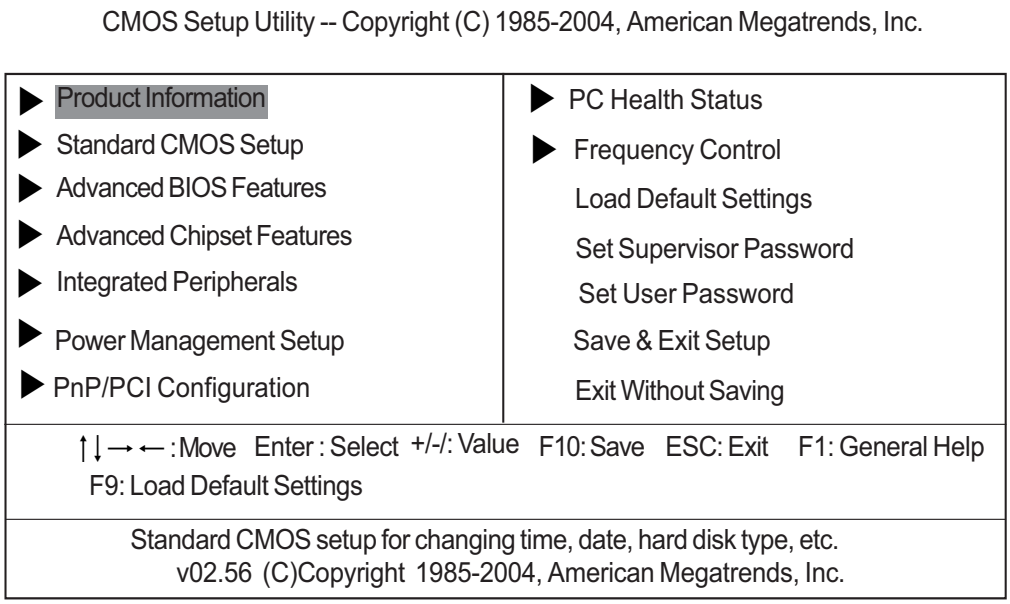
Q-Flash allows the user to quickly and easily update or backup BIOS without entering the operating system. BIOS is a Window s-based utility that doesn’t required users to boot to DOS before upgrading BIOS but directly download and update BIOS from the Internet.

Item	Description
↑ → ↓ ←	Move to selection
ENTER	Select Item
ESC	Main Menu: Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu, Exit current page and return to Main Menu.
PG UP	Increase the numeric value or make changes
PG DN	Decrease the numeric value or make changes
F1	General help, displays a screen that describes all key functions
F9	Loads an default setting for stable performance
F10	Save all the CMOS changes, only for Main Menu

Entering Setup

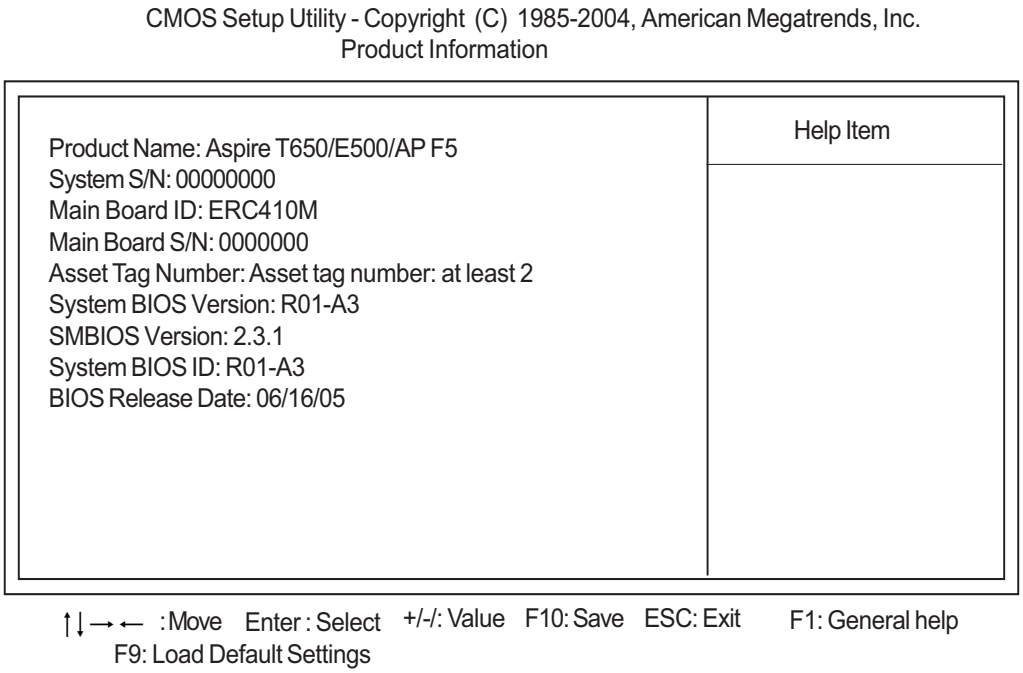
Once enter Award BIOS CMOS Setup Utility, the Main Menu (as figure below) will appear on the screen.

Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



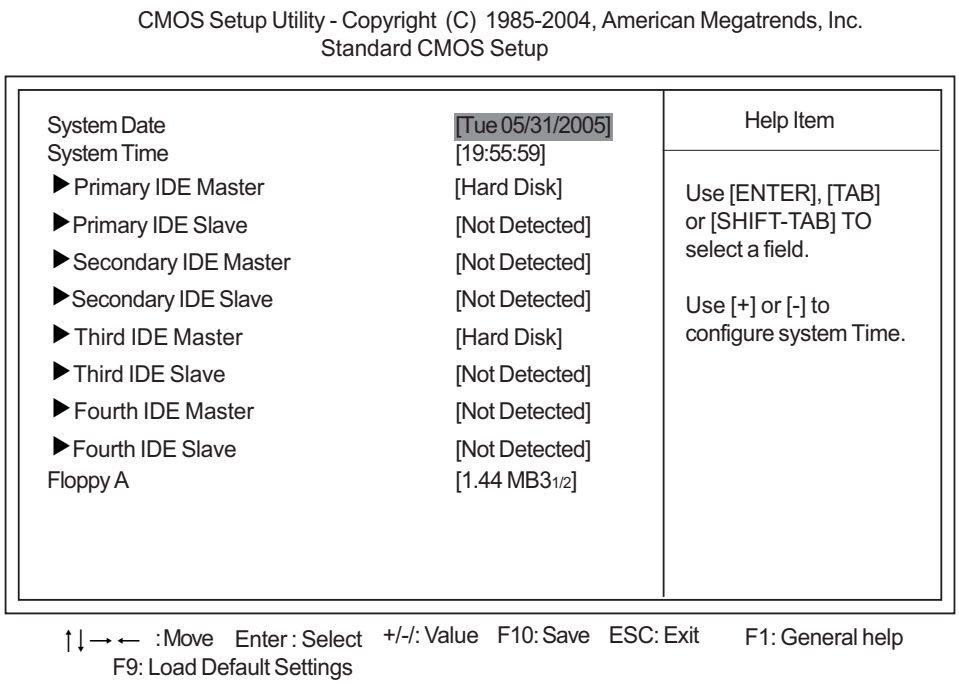
Parameter	Description
Product Information	This page shows the relevant information of the mainboard
Standard CMOS Features	This setup page includes all the items in standard compatible BIOS
Advanced BIOS Features	This setup page includes all the items of Award special enhanced features
Integrated Peripherals	This setup page includes all onboard peripherals
Power Management Setup	This setup page includes all the items of Green function features
PnP/PCI Configuration	This setup page includes all configurations of PCI&PnP ISA resources
PC Health Status	This setup page is the System auto detect Temperature, voltage, fan and speed
Load Default Settings	Default Settings indicates the value of the system parameters which the system would be in best performance configuration
Set Supervisor Password	Change, set or disable password. It allows you to limit access to the system and Setup, or just to Setup
Set User Password	Change, set or disable password. It allows you to limit access to the system
Save & Exit Setup	Save CMOS value settings to CMOS and exit setup
Exit Without Saving	Abandon all CMOS value changes and exit setup

Product Information



Parameter	Description
Product Name	This item lists the product name
System S/N	This item lists the system serial number
Main Board ID	This item lists the mainboard ID
Main Board S/N	This item lists the mainboard serial number
Asset Tag Number	This item lists the asset tag number
System BIOS Version	This item lists the system BIOS version
SMBIOS Version	This item lists the system SMBIOS version
System BIOS ID	This item lists the system BIOS ID
BIOS Release Date	This item lists the BIOS release date

Standard CMOS Features

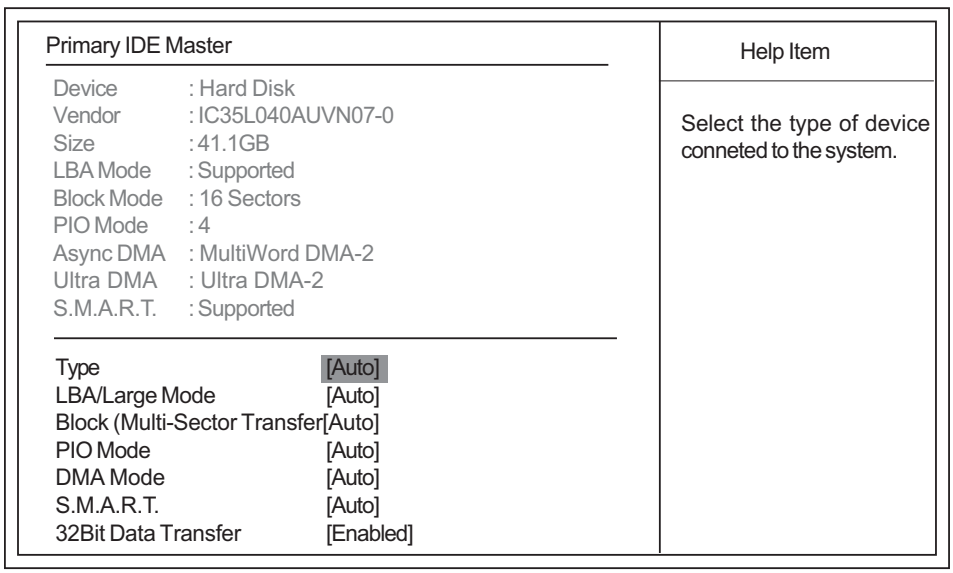


The following table describes the parameters found in this menu:

Parameter	Description	Options
Date	Lets you set the date following the weekday-month-day-year format	Week : from Sun. to Sat., determined by BIOS and is display only Month : from Jan. through Dec. Day : from 1 to 31 (or the maximum allowed in the month) Year : from 1999 to 2098
Time	Lets you set the time following the hour-minute-second format	The items format is <hour> <minut><second>. The time is calculated base on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00

Parameter	Description	Options
IDE Primary/Secondary/ third/Fourth Master, Slave	Allows you to configure the hard disk drive connected to the master port of IDE channel. To enter the IDE Master or Slave setup, press [Enter]. The IDE CD-ROM is always automatically detected.	IDE HDD Auto-Detection Press [Enter] to select this option for automatic device detection. IDE Primary/Secondary Master, Slave IDE Device Setup. You can use one of three methods: Auto : Allows BIOS to automatically detect IDE devices during POST (default) **None** : Select this if no IDE devices are used and the system will skip the automatic detection step and allow for faster system start up Manual : User can manually input the correct settings Access Mode : Use this to set the access mode for the hard drive. the four options are: CHS/LBA/Large/Auto (default: Auto) ❑ Cylinder : Number of cylinders ❑ Head : Number of heads ❑ Precomp : Write precomp ❑ Landing Zone : Landing Zone ❑ Sector : Number of sectors
Floppy A	The category identifies the types of floppy disk drive A that has been installed in the computer.	None : No floppy drive installed 360K, 5.25” : 5.25 inch PC type standard drive ; 360Kbyte capacity 1.2M, 5.25” : 5.25 inch AT-type high-density drive; 1.2M byte capacity (3.5 inch when 3 Mode is Enabled) 720K, 3.5” : 3.5 inch double-sided drive; 720Kbyte capacity **1.44M, 3.5”** : 3.5 inch double-sided drive; 1.44Mbyte capacity 2.88M, 3.5” : 3.5 inch double-sided drive; 2.88Mbyte capacity

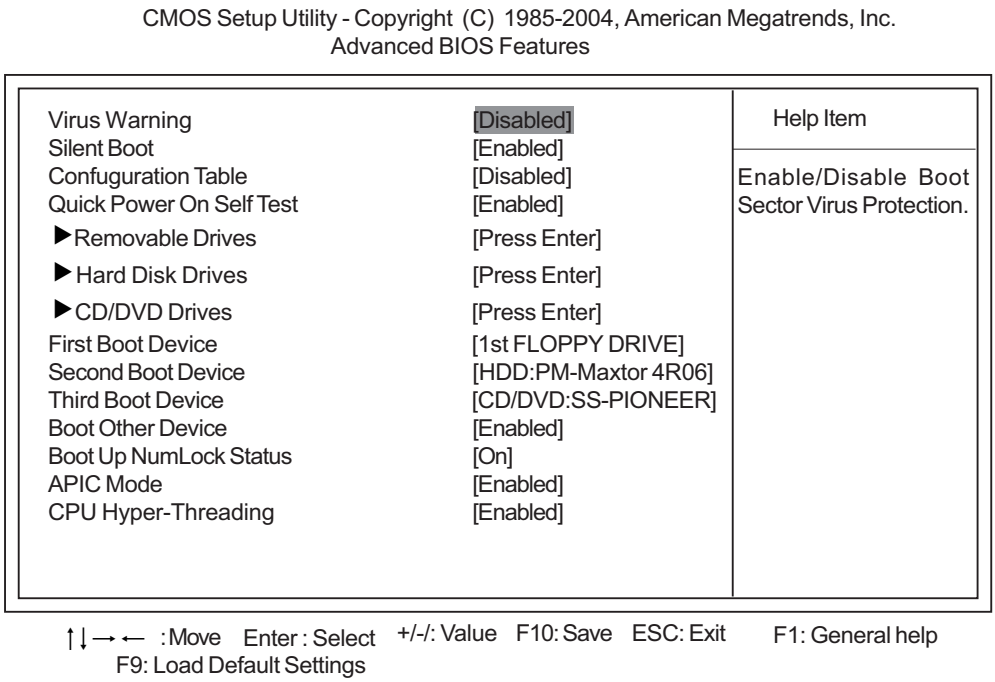
Primary IDE Master



This section indicate the detailed information and the related setting of the Primary IDE Master device installed on the system. Users are recommended to keep these setting at their default setting.

Advanced BIOS Features

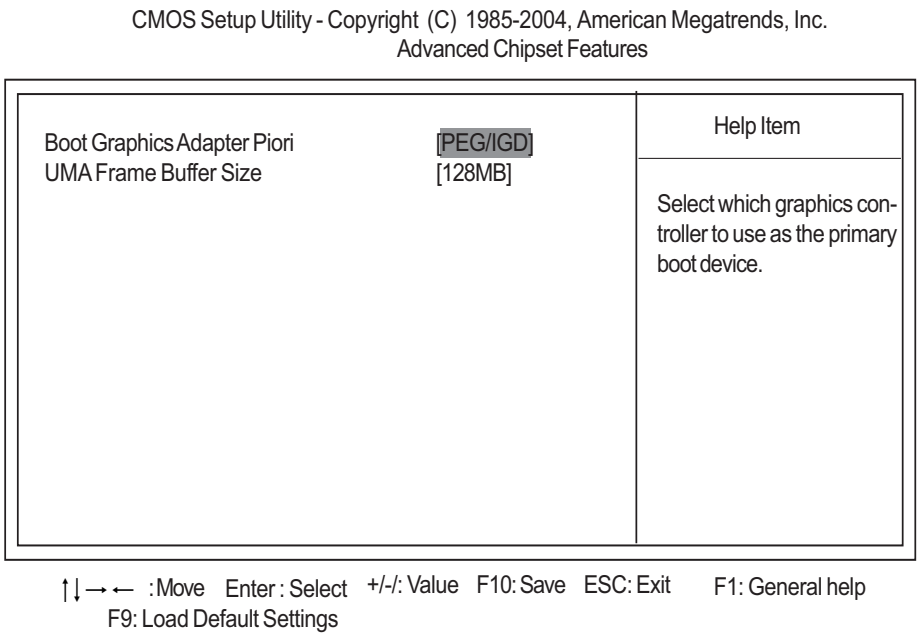
The following screen shows the Advanced BIOS Features:



Parameter	Description	Options
Virus Warning	This feature allows you to enable the VIRUS warning function for IDE Hard Disk boot sector protection. If this function is enabled and there is someone attempt to write data into this area, BIOS will show a warning message on screen and the alarm will beep.	Enabled **Disabled**
Silent Boot	This features allows you to enable or disable if the screen logo to display or no during POST	**Enabled** Disabled
Configuration Table	This feature allows you to enable or disable if showing summary screen or not	Enabled **Disabled**
Quick Power On Self Test	This feature allows the system to skip certain tests while booting. When this function is enabled, it will decrease the time needed to boot the system, which means to quick power on self test function	**Enabled** Disabled
First / Second / Third Boot Device	The item allows you to set the sequence of boot device where BIOS attempts to load the disk operating system.	**Floppy**, LS120, Hard Disk, CD-ROM, ZIP, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled
Boot other Devices	This item allows you to enable or disable to boot from other device	**Enabled** Disabled
Boot Up NumLock Status	This item allows you to enable or disable to set keyboard is number keys or arrow keys	**Enabled** Disabled
APCI Mode	This option is used to set up enable or disable the APCI funtion	Enabled **Disabled**
CPU Hyper-Threading	This item is only available when CPU and the chipset support Hyper-Threading	**Enabled** : Enables CPU Hyper Threading Feature. Please note that this feature is only working for operating system with multi processors mode supported. Disabled : Disables CPU Hyper Threading

Advanced Chipset Features

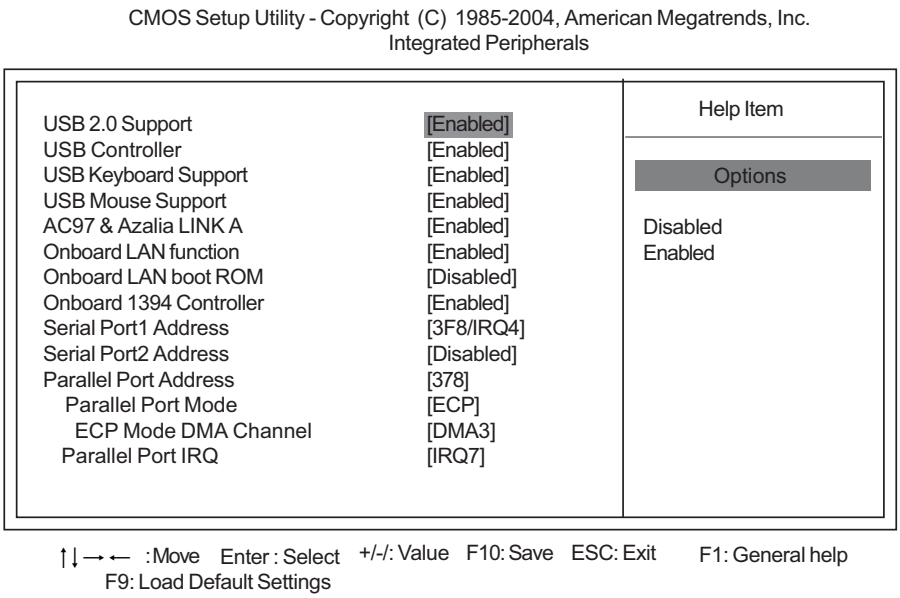
This page sets up more advanced information about your system. Handle this page with caution. ANy changes can affect the operation of your computer.



Parameter	Description	Options
Boot Graphics Adapter Piori	This item allow users to select which graphics controller to use as the primary boot device.	IGD **PEG/IGD** PCI/IGD
UMA Frame Buffer Size	This item allows users to set the UMA Frame Buffer Size manually	32, 64, **128**, 256 MB

Integrated Peripherals

All onboard peripherals can be set up through this menu.



Parameter	Description	Options
USB 2.0 Controller	Enable this item if the system supports USB 2.0	**Enabled** : Enable USB 2.0 Controller Disabled : Disable USB 2.0 Controller
USB Controller	This item is used to enable or disable the on-chip USB	**Enabled** : Enable USB Controller Disabled : Disable USB Controller
USB Keyboard Support	This item lets you enable or disable the USB keyboard driver within the onboard BIOS. The keyboard driver is simulates legacy keyboard command and lets you use a USB keyboard during POST or after boot if you do not have a USB driver in the operating system	Enabled : Enable USB Keyboard Support **Disabled** : Disable USB Keyboard Support
USB Mouse Support	This item lets you enable or disable the USB mouse driver within the onboard BIOS. The keyboard driver simulates legacy mouse command and lets you use a USB mouse during POST or after boot if you do not have a USB driver in the operating system.	Enabled : Enable USB Mouse Support **Disabled** : Disable USB Mouse Support
Onboard LAN function	This function is used to set whether the onboard LAN card is enabled.	**Enabled** Disabled
Onboard LAN Boot ROM	This function decide whether to invoke the boot ROM of the onboard LAN chip	Enabled **Diabled**
Onboard 1394 Controller	THis item allows users to enable or disable the onboard 1394 Controller function.	**Enabled** Disabled
Serial Port 1/2 Address	This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 1 or 2	Auto : BIOS will automatically setup the port 1 or 2 address **3F8/IRQ4 (Serial Port 1 default)** **2F8/IRQ3 (Serial Port 2 default)** 3E8/IRQ4 2E8/IRQ3 Diabled : Disable onboard Serial port 1 or 2

Parameter	Description	Options
Paraller Port Address	This item allows users to manually set the address for Serial Port1&Port2	278 **378** 3BC Disabled
Parallel Port Mode	This item allows users to manually set the Parallel Port Mode	**ECP**, EPP, Normal, EPP+ECP
ECP Mode DMA Channel	This item allows users to manually set the DMA Channel for ECP value	DMA0 DMA1 **DMA3**
Paraller Port IRQ	This item allows users to manually set the Parallel Port IRQ value	IRQ5 **IRQ7**

Power Management Setup

The Power Management menu lets you configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

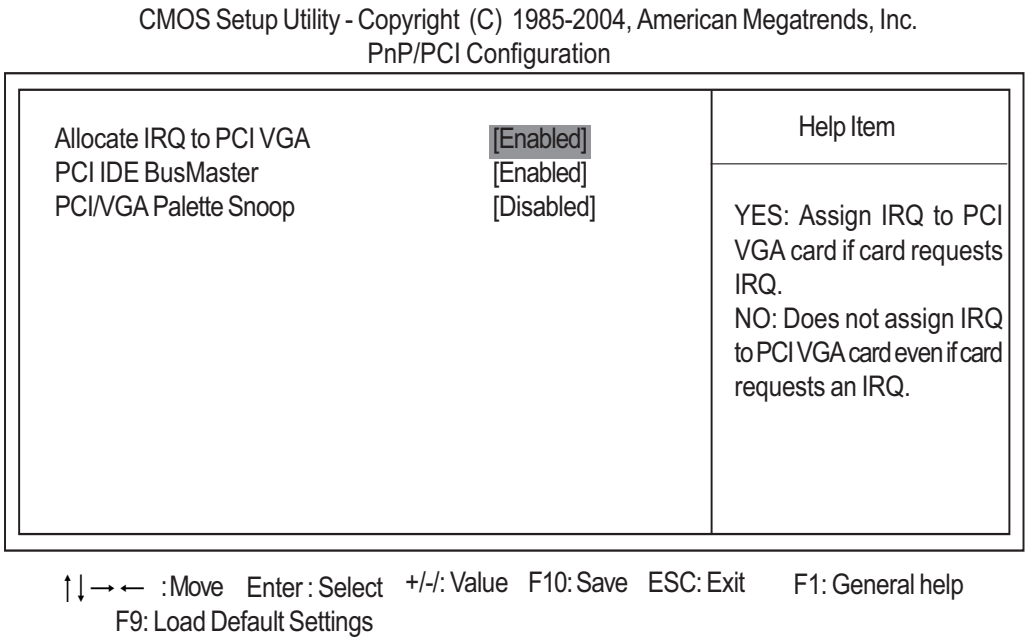
CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.
Power Management Setup

		Help Item
ACPI function	[Enabled]	
ACPI Suspend Type	[S3 (STR)]	Enable / Disable ACPI support for Operating System.
Hard Disk Power Down Mode	[Disabled]	
Soft-off by PWR-BTTN	[Delay 4 Sec]	Enable: If OS supports ACPI.
PWRON After PWR-Fail	[Last State]	
Power On by Ring	[Disabled]	Disable: If OS does not support ACPI.
Wake-Up by PCI Card	[Enabled]	
USB KB Wake UP From S3	[Enabled]	
Resume by Alarm	[Disabled]	

↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit F1: General help
F9: Load Default Settings

Parameter	Description	Options
ACPI Function	This item allows you to enable or disable the ACPI function	**Enabled** Disabled
ACPI Suspend Type	This item specifies the power saving modes for ACPI function. S1(POS): The S1 sleep mode is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context. S3 (STR): The S3 sleep mode is s power-down state in which power is supplied only to essential components such as main memory and wake-capable devices and all system context is saved to main memory. The information stored in memory will be used to restore the PC to the previous state when an wake-up event occurs.	**S1 (POS)** : Set ACPI suspend type to S1/POS(Power On Suspend). S3 (STR) : Set ACPI suspend type to S3/STR
HDD Power Down Mode	This setting controls how long a hard disk drive must be left idle before ir spins down.	**Disabled** Standby Suspend
Soft-off by PWR-BTTN	This feature allows users to configure the power button function.	Instand-off : Press down button then power off instantly Delay 4 Sec. : Press power button 4 sec. to power off. Enter suspend if button is pressed less than 4 sec.
PWRON After PWR-BTTN	Under ACPI, you can create a software power down. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hole the power button down for 4 seconds to cause a software power down.	**Delay 4 Sec** On/Off
Power On by Ring	An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.	Disabled : Disable Power On by Ring function Enabled : Enable Power On by Ring function
Wake-Up by PCI Card	This option allows the activity of the PCI devices to wake up the system from S3 sleep state.	Disabled **Enabled**
USB KB Wake Up From S3	**This option allows the activity of the USB devices to wake up the system from S3 sleep state.**	**Enabled** Disabled
Resume by Alarm	You can set “Resume by Alarm” item to enabled and key in Data/Time to power on system	**Disabled** : Disable this function Enabled : Enable alarm function to Power On system If RTC Alarm Lead To Power On is Enabled. Date (of Month) Alarm : Everyday, 1~31 Time (hh:mm:ss) Alarm: (0.~23):(0~59):(0~59)

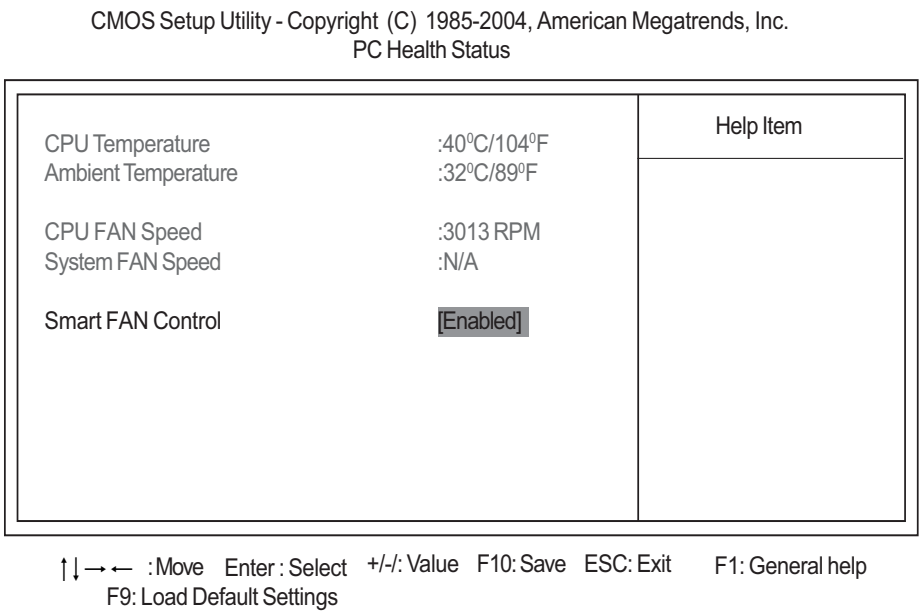
PnP/PCI Configuration



Parameter	Description	Options
Allocate IRQ to PCI VGA	This item allows users to enable or disable the function of allocating IRQ to PCI VGA	**Enabled** Disabled
PCI IDE BusMaster	THis item allows users to enable or disable the PCI IDE BusMaster function. Users are recommended to keep this item at its default value.	**Enabled** Disabled
PCI/VGA Palette Snoop	This option is only very rarely needed. It should be left at “Disabled” unless a video device specifically requires the setting enabled upon installation.	**Disabled** Enabled

PC Health Status

This section indicates the hardware information of the system including the CPU temperature, Ambient Temperature, CPU FAN, and System FAN speed.

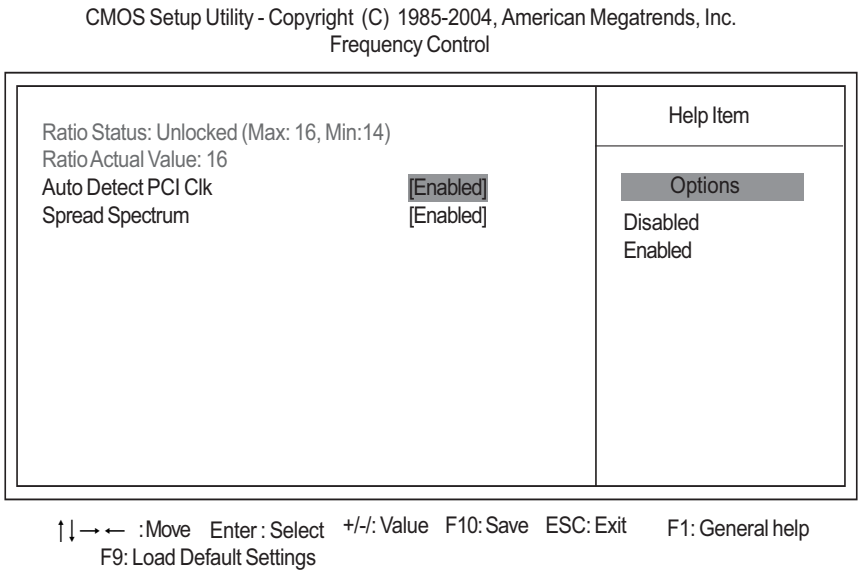


The following table describes the parameters found in this menu:

Parameter	Description
Ambient Temperature	Delect ambient temperature automatically
CPU Temperature	Detect CPU Temperature automatically
CPU / SYSTEM FAN Speed (RPM)	Detect CPU/SYSTEM Fan Speed status automatically

Frequency Control

This page helps you to set up the frequency control of the motherboard.



Parameter	Description
Ratio Status	You can only adjust the Ratio CMOS if you installed an unlocked CPU.
Ratio Actual Value	This item indicates the ratio actual value of this motherboard
Auto Detect PCI Clk	When this item is enabled, BIOS will disable the clock signal of free PCI slots
Spread Spectrum	If you enable spread spectrum, ite can significantly reduce the EMI(Electro-Magnetic Interference) generated by the system.

Load Default Settings

Selecting the field loads the factory defaults for BIOS and Chipset Features which the system automatically. detects. THis option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <OK> and then <Enter> to install the defaults. Press <Cancel> and then <Enter> to not install the defaults.

If you only want to install setup dafaults for a specific option, select and display that option, and then press<F9>.

Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press<Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press ,Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

If you have selected “System” in “Security Option” of “BIOS Features Setup” menu, you will be promped for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected “Setup” at “Security Option” from “BIOS Features Setup” menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility.

When the Save and Exit dialog box appears, press <Y> to save and exit, or press <N> to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility.

When the Exit Without Saving dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.

NOTE: If you have made settings that you do not want to save, use the "Exit Without Saving" item and press <Y> to discard any changes you have made.

Machine Disassembly and Replacement

To disassemble the computer, you need the following tools:

- Wrist grounding strap and conductive mat for preventing electrostatic discharge.
- Wire cutter.
- Phillips screwdriver (may require different size).

NOTE: The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatches when putting back the components.

General Information

Before proceeding with the disassenbly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.

Disassembly Procedure

This section tells you how to disassemble the system when you need to perform system service. Please also refer to the disassembly video, if available.

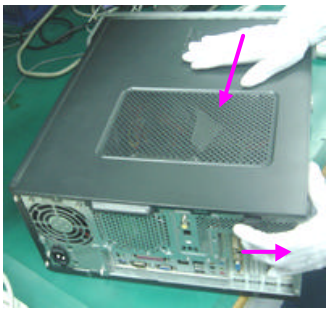
CAUTION: Before you proceed, make sure you have turned off the system and all peripherals connected to it.

Aspire T650 Standard Disassembly Procedure

Opening the System

1. Place the system unit on a flat, steady surface.

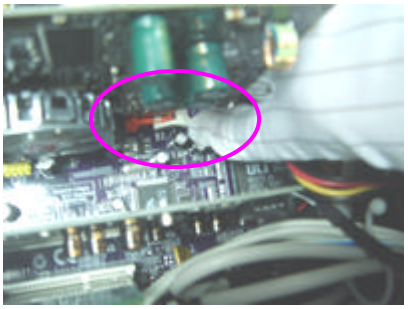
2. Turn the housing down, slide the Lock-handle as shown , meanwhile slide the left side door out .



Remove the ADD ON Cards

1. Release the PCI-Lock as shown bellow, then remove it.

2. Release the VGA-slot Lock shown bellow, then pull out the VGA Card.

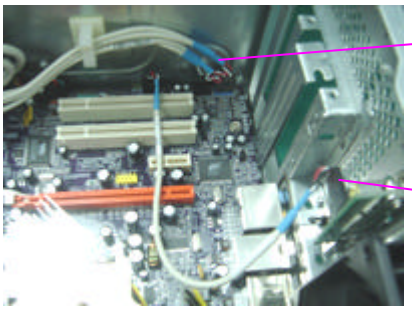


3. Remove the TV Tuner Card.

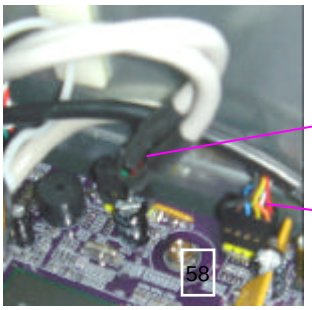
4. Remove the Modem card.

Remove the Cables

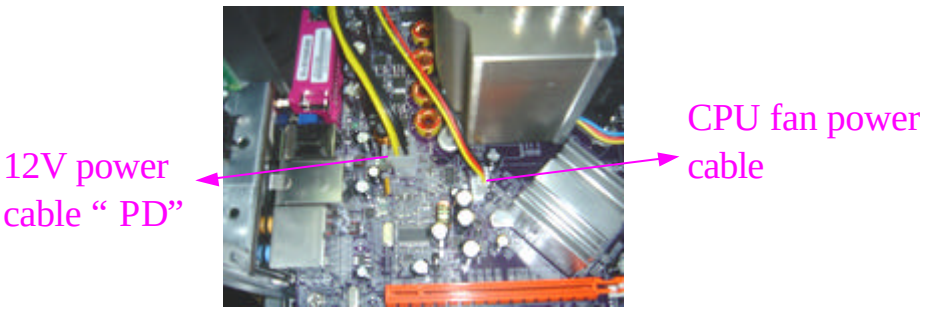
1. Disconnect the SPDIF and AUDIO cables.



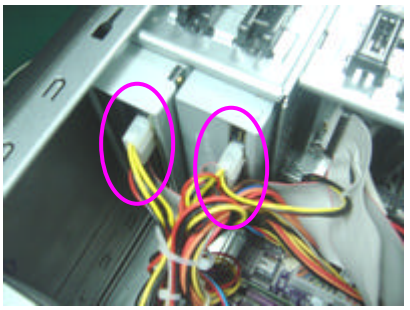
2. Disconnect the USB and Card-reader Cables.



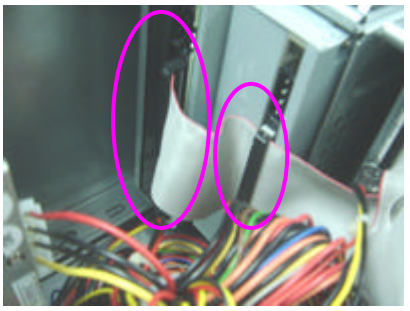
3. Disconnect 12V power cable “ PD” and CPU fan power cable from the M/B.



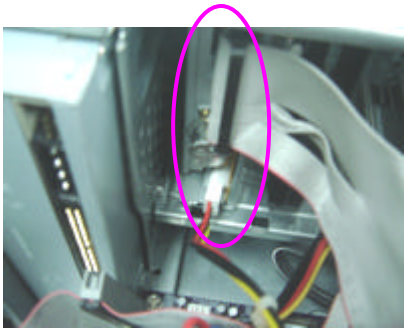
4. Disconnect the 4 Pin power cable “PE” from the master ODD, “PF” from the slave ODD.



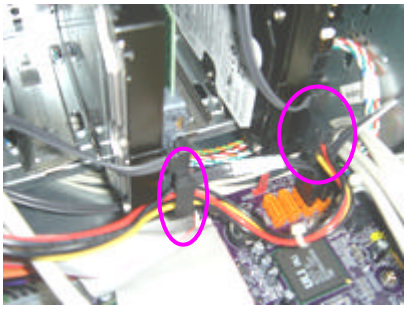
5. Disconnect the ODD IDE cable from the master & slave ODD.



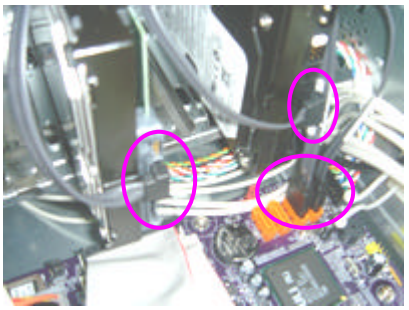
6. Disconnect the FDD data and power cable from the FDD.



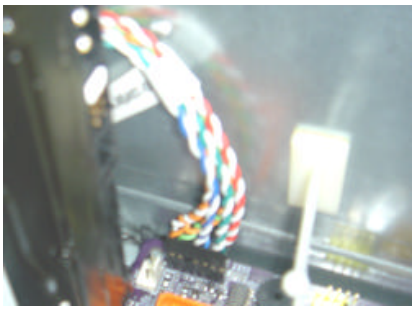
7. Disconnect the “PB” power cable from the master HDD, “PC” from the slave HDD.



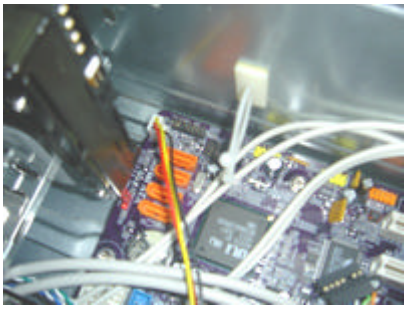
8. Disconnect the two HDD SATA cables from the HDDs and M/B connector.



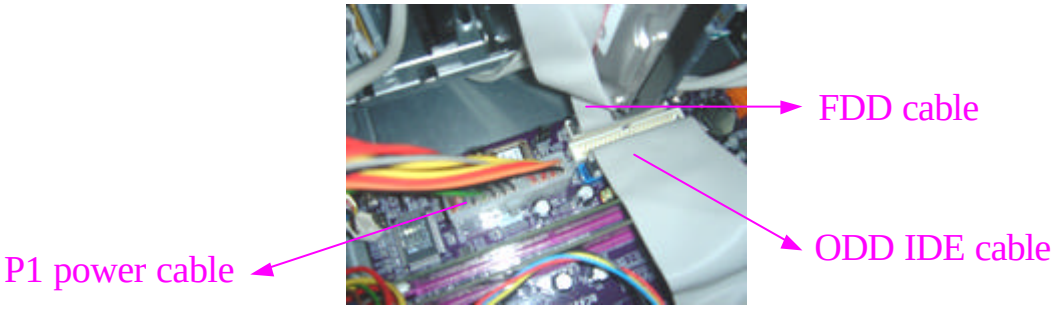
9. Disconnect the LED cable ASSY from the M/B Connector.



10. Disconnect the system fan power cable from the M/B Connector.

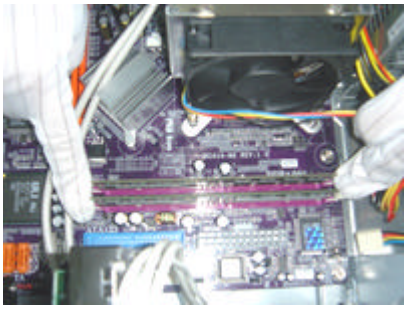


11. Disconnect the ODD&FDD IDE and P1 power cable from the M/B connector.



Remove the Memory

Loose the DIMM Latch and pop out the two memory shown bellow.

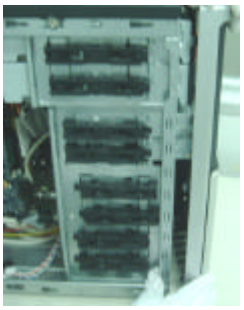


Remove the Heatsink module.

Loosen the four screws , then remove the Heatsink.

Remove the front bezel

Release the three latches on the front bezel, then remove the front bezel.

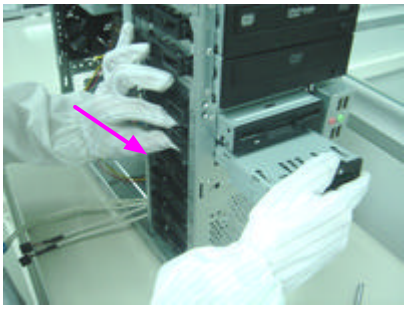


Remove the CD-ROM, Floppy, Card-reader and HDD

1. Release the HDD-Holder, meanwhile pull the master HDD out of the chassis.

2. Release the HDD-Holder, meanwhile pull the slave HDD out of the chassis.

3. Release the FDD-Holder, meanwhile pull the Card-reader Module out of the chassis.



4. Release the FDD-Holder, meanwhile pull the Card-reader Module out of the chassis.

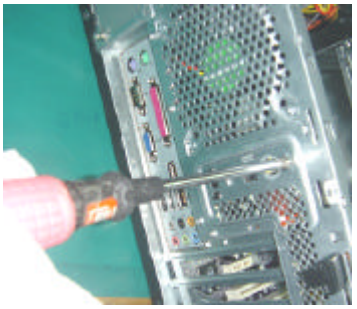
Release the ODD-Holder, meanwhile pull the Slave ODD out of the chassis, then the Master one.

Removing the USB Module

Remove the screw as shown bellow, detach the USB Module, then pull down the USB&Audio cable from the USB board.

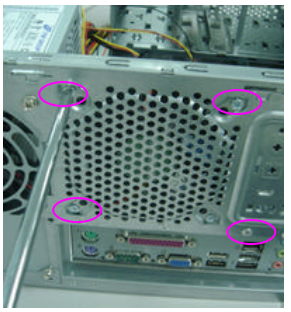
Removing the SPDIF Module

Remove the screw as shown bellow and remove it.



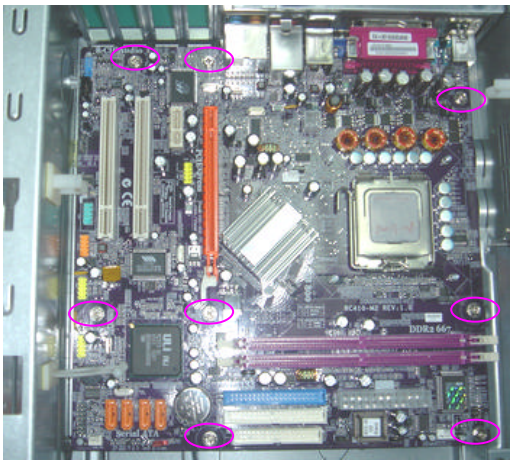
Remove the System Fan

Remove the four screws and remove the system fan shown bellow.



Remove the Mainboard

Remove the eight screws and remove the Mainboard shown bellow.



Remove the Power-supply

Remove the four screws shown bellow and remove the Power-supply.

Aspire T650 Standard Reassembly Procedure

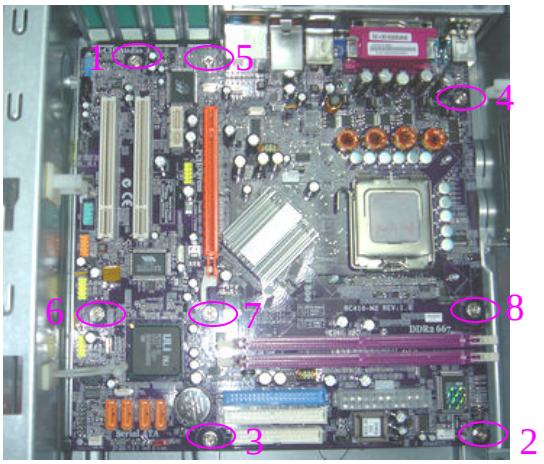
Install the Power-supply

Fit the Power-supply into the chassis, then fasten the four screws shown bellow.

Install the Mainboard

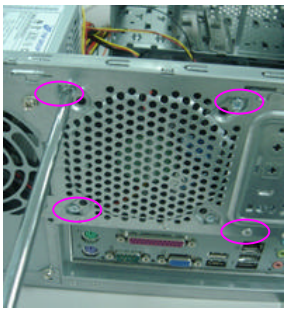
1.Put the M/B into the chassis aligning the I/O connector , make sure M/B VIA hole fits the oriented STAND OFF on the chassis.

2.Fix the M/B with 8pcs screws by turn of number in the picture.



Install the System Fan

Fit the System Fan into the chassis , then fasten the four screws shown bellow.



Install the SPDIF Module

Fit the SPDIF Module into the chassis and fasten the screw to fix it.

Install the USB Module

Lead the USB&AUDIO cables into the chassis, fit the USB Module onto the chassis, then tight the screw shown bellow.

Install the CD-ROM, Floppy, Card-reader Module and HDD

1.Install the master ODD into the first ODD location, then install the slave ODD into the second ODD location, and slide the lock handle the lock the ODDs.

2.Install the FDD into the first 3.25" location, and slide the lock handle the lock it.

3. Install the Card-reader Module (with cable) into the second 3.25" location, and slide the lock handle the lock it.

4. Install the slave HDD into the forth HDD location, then slide the lock handle the lock the HDD.

5. Install the master HDD into the second HDD location, then slide the lock handle the lock the HDD.

Install the front bezel

Lead the LED CABLE into the chassis hole, then fit the front bezel to the chassis.

Install the Heatsink module.

Fit the Heatsink onto the MB, then fasten the four screws shown bellow.

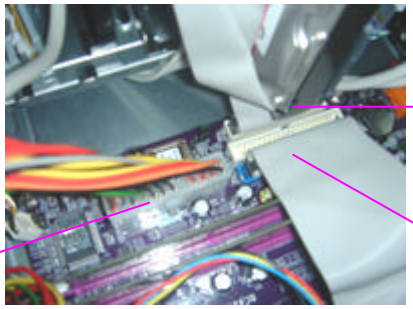
Install the Memory

1.Insert the memory1 into the DIMM SLOT1 shown here.

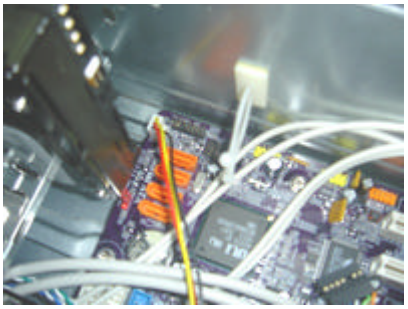
2.Insert the memory2 into the DIMM SLOT2 shown here.

Connect the Cables

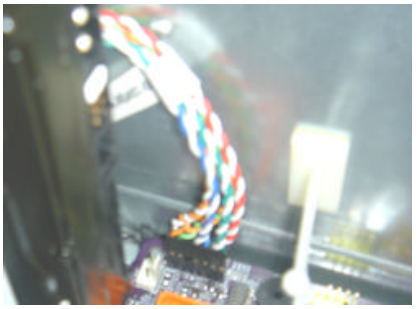
1. Connect the ODD&FDD IDE and P1 power cable to the M/B connector.



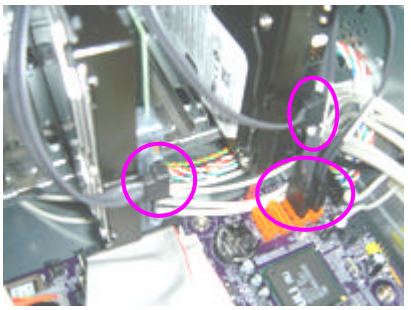
2. Connect the system fan power cable to the M/B Connector.



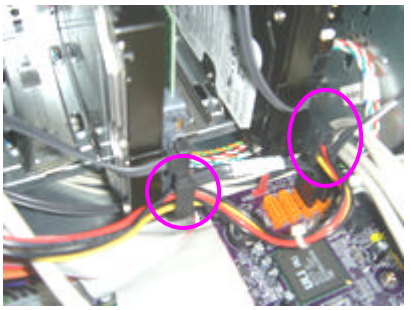
3. Connect the LED cable ASSY to the M/B Connector.



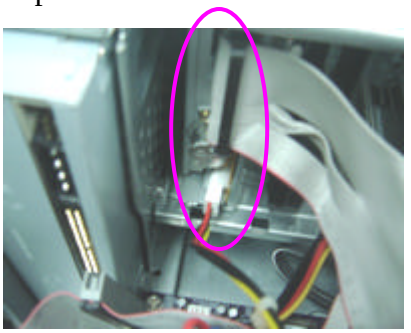
4. Connect the two HDD SATA cables to the HDDs and M/B connector.



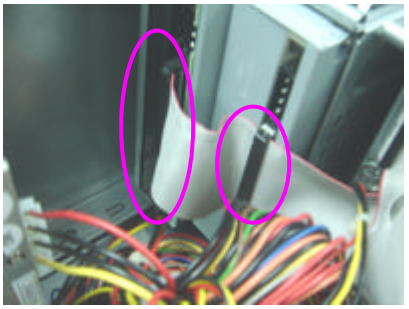
5. Connect the “PB” power cable to the master HDD, “PC” to the slave HDD.



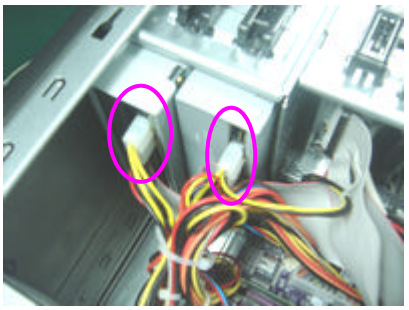
6. Connect the FDD data and power cable to the FDD.



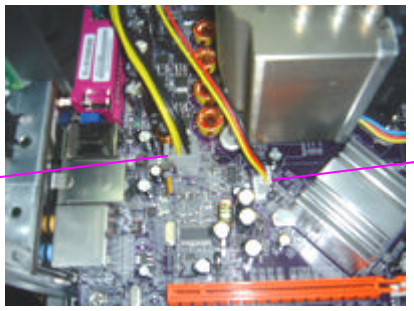
7. Connect the ODD IDE cable to the master & slave ODD.



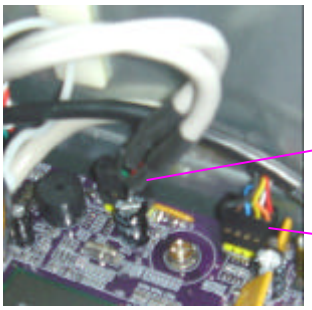
8. Connect the 4 Pin power cable “PE” to the master ODD, “PF” to the slave ODD.



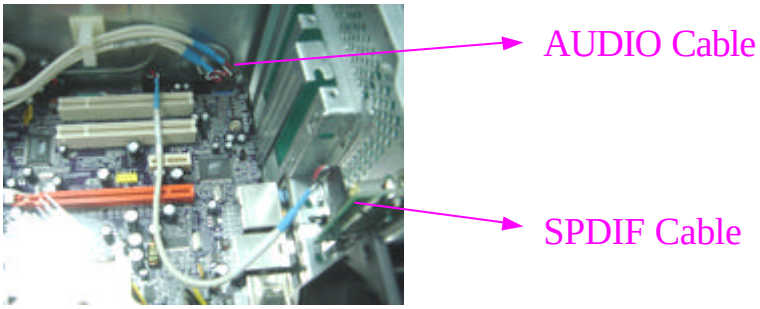
9. Connect 12V power cable “ PD” and CPU fan power cable to the M/B.



10. Connect the USB and Card-reader Cables.

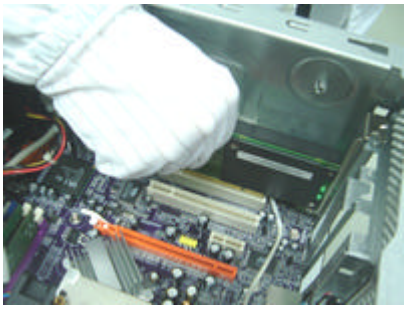


11. Connect the SPDIF and AUDIO cables.



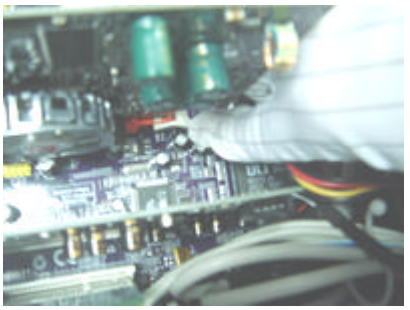
Install the ADD ON Cards

1. Insert the Modem Card into the PCI SLOT3.



2. Insert the TV Tuner Card into the PCI SLOT2.

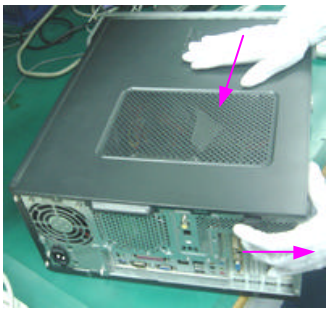
3. Insert the VGA Card into the PCI-E slot, then rail the latch on to hold it.



4. Fit the PCI-Lock into the chassis to lock the ADD ON cards.

Close the System

Place the side door back to the original position, then slide the Lock-handle back to fasten it.

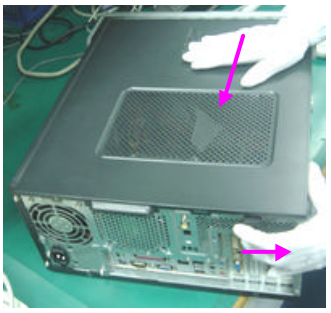


Aspire E500 Standard Disassembly Procedure

Opening the System

1. Place the system unit on a flat, steady surface.

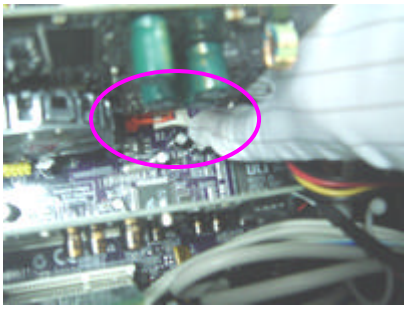
2. Turn the housing down, slide the Lock-handle as shown , meanwhile slide the left side door out .



Remove the ADD ON Cards

1. Release the PCI-Lock as shown bellow, then remove it.

2. Release the VGA-slot Lock shown bellow, then pull out the VGA Card.

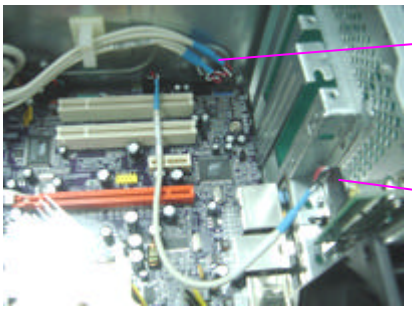


3. Remove the TV Tuner Card.

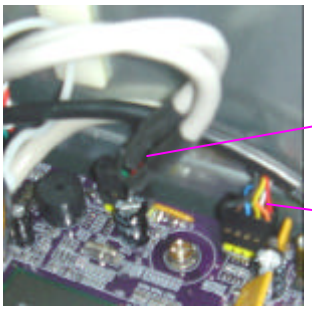
4. Remove the Modem card.

Remove the Cables

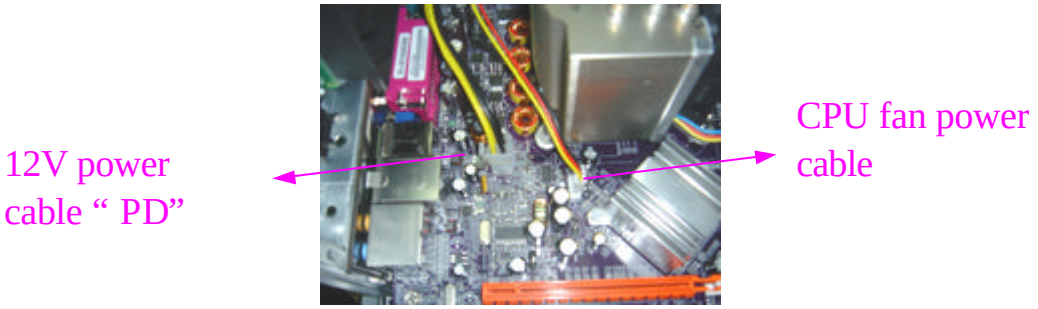
1. Disconnect the SPDIF and AUDIO cables.



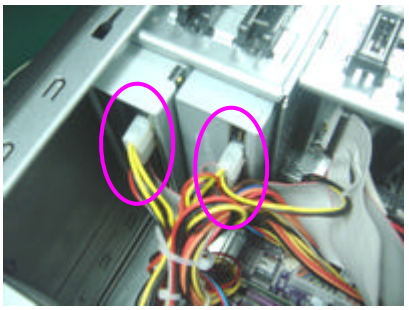
2. Disconnect the USB and Card-reader Cables.



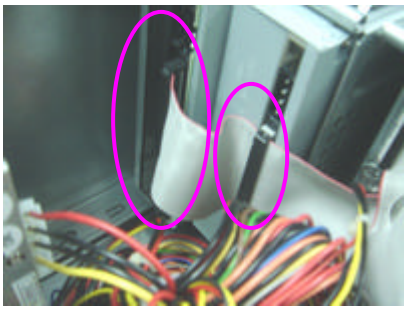
3. Disconnect 12V power cable “ PD” and CPU fan power cable from the M/B.



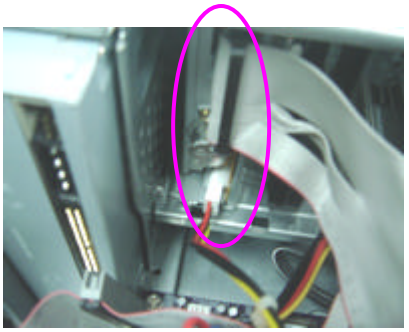
4. Disconnect the 4 Pin power cable “PE” from the master ODD, “PF” from the slave ODD.



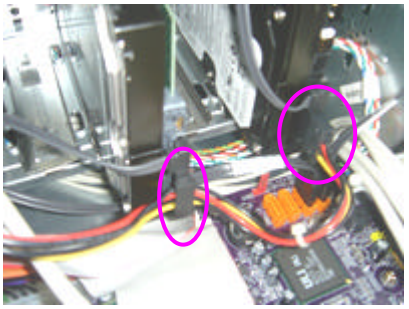
5. Disconnect the ODD IDE cable from the master & slave ODD.



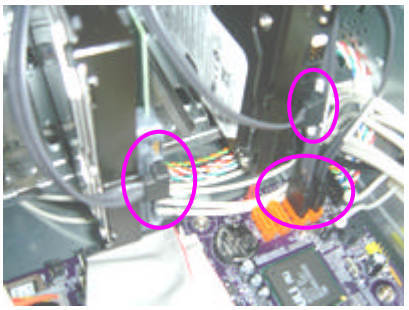
6. Disconnect the FDD data and power cable from the FDD.



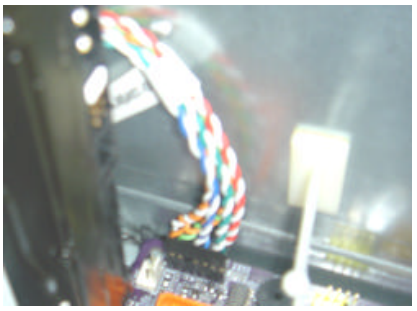
7. Disconnect the “PB” power cable from the master HDD, “PC” from the slave HDD.



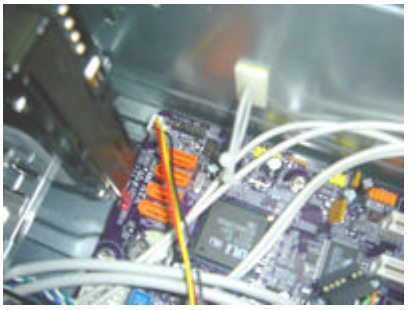
8. Disconnect the two HDD SATA cables from the HDDs and M/B connector.



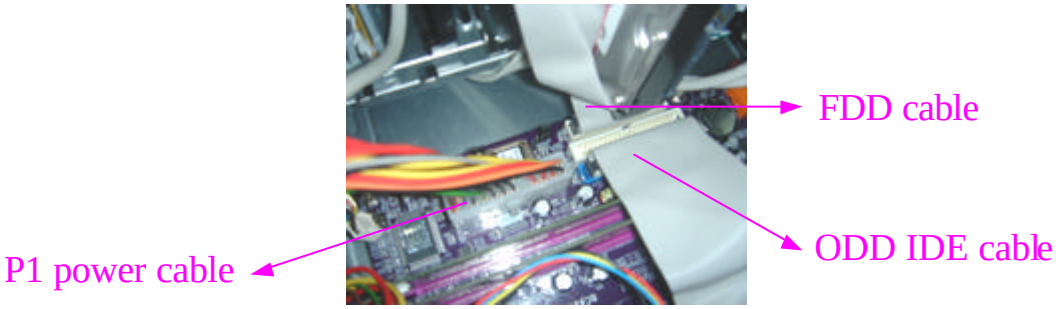
9. Disconnect the LED cable ASSY from the M/B Connector.



10. Disconnect the system fan power cable from the M/B Connector.

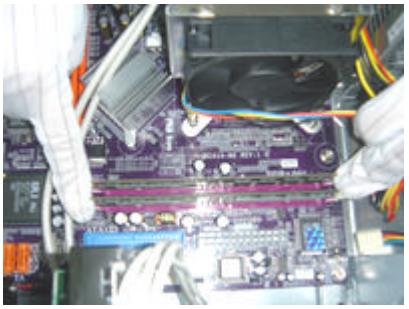


11. Disconnect the ODD&FDD IDE and P1 power cable from the M/B connector.



Remove the Memory

Loose the DIMM Latch and pop out the two memory shown bellow.

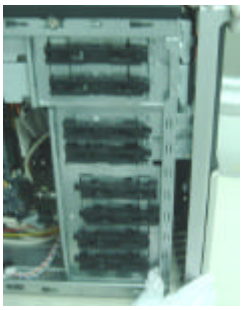


Remove the Heatsink module.

Loosen the four screws , then remove the Heatsink.

Remove the front bezel

1. Release the three latches on the front bezel, then remove the front bezel.



2. Remove the Top-cover ASSY form the chassis top.

Remove the CD-ROM, Floppy, Card-reader and HDD

1. Release the HDD-Holder, meanwhile pull the master HDD out of the chassis.

2. Release the HDD-Holder, meanwhile pull the slave HDD out of the chassis.

3. Release the FDD-Holder, meanwhile pull the Card-reader Module out of the chassis.

4. Release the FDD-Holder, meanwhile pull the Card-reader Module out of the chassis.

5. Release the ODD-Holder, meanwhile pull the Slave ODD out of the chassis, then the Master one.

Removing the USB Module

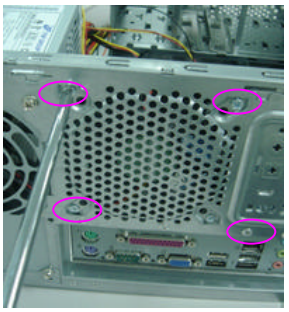
Remove the screw as shown bellow, detach the USB Module, then pull down the USB&Audio cable from the USB board.

Removing the SPDIF Module

Remove the screw as shown bellow and remove it.

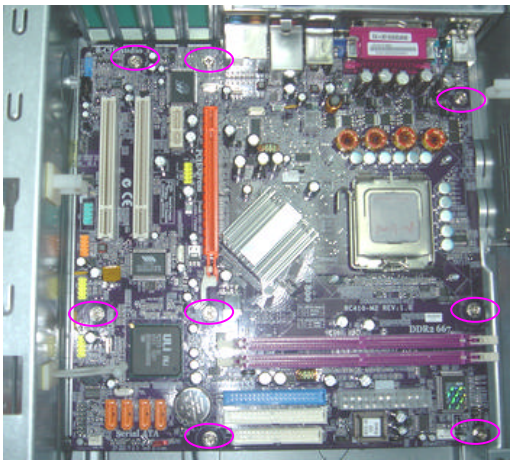
Remove the System Fan

Remove the four screws and remove the system fan shown bellow.



Remove the Mainboard

Remove the eight screws and remove the Mainboard shown bellow.



Remove the Power-supply

Remove the four screws shown bellow and remove the Power-supply.

Aspire E500 Standard Reassembly Procedure

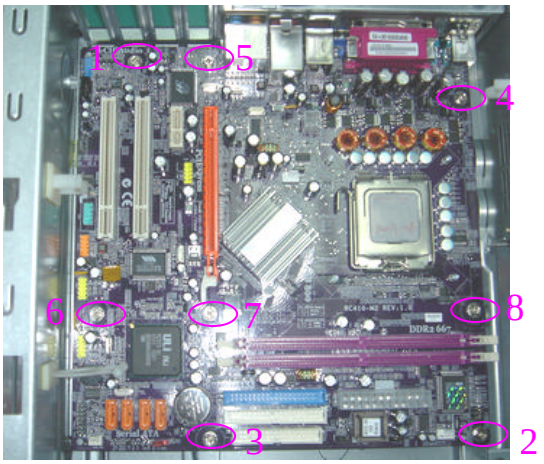
Install the Power-supply

Fit the Power-supply into the chassis, then fasten the four screws shown bellow.

Install the Mainboard

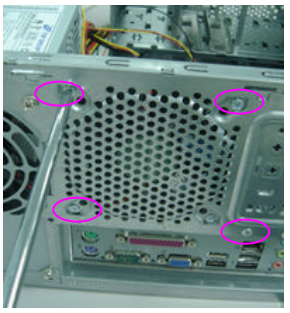
1.Put the M/B into the chassis aligning the I/O connector , make sure M/B VIA hole fits the oriented STAND OFF on the chassis.

2.Fix the M/B with 8pcs screws by turn of number in the picture.



Install the System Fan

Fit the System Fan into the chassis , then fasten the four screws shown bellow.



Install the SPDIF Module

Fit the SPDIF Module into the chassis and fasten the screw to fix it.

Install the USB Module

Lead the USB&AUDIO cables into the chassis, fit the USB Module onto the chassis, then tight the screw shown bellow.

Install the CD-ROM, Floppy, Card-reader Module and HDD

1.Install the master ODD into the first ODD location, then install the slave ODD into the second ODD location, and slide the lock handle the lock the ODDs.

2.Install the FDD into the first 3.25" location, and slide the lock handle the lock it.

3. Install the Card-reader Module (with cable) into the second 3.25" location, and slide the lock handle the lock it.

4. Install the slave HDD into the forth HDD location, then slide the lock handle the lock the HDD.

5. Install the master HDD into the second HDD location, then slide the lock handle the lock the HDD.

Install the front bezel

1. Fit the Top-cover ASSY to the chassis top.

2. Lead the LED CABLE into the chassis hole, then fit the front bezel to the chassis.

Install the Heatsink module.

Fit the Heatsink onto the MB, then fasten the four screws shown bellow.

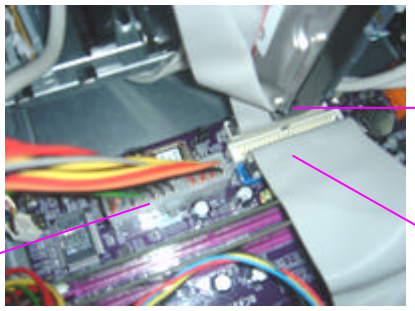
Install the Memory

1.Insert the memory1 into the DIMM SLOT1 shown here.

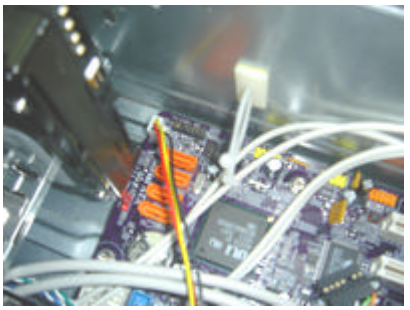
2.Insert the memory2 into the DIMM SLOT2 shown here.

Connect the Cables

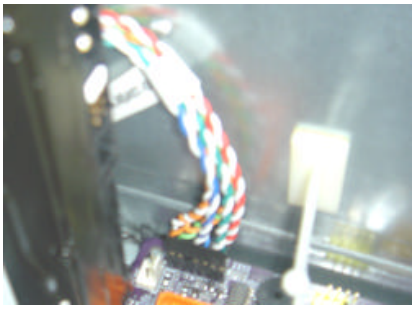
1. Connect the ODD&FDD IDE and P1 power cable to the M/B connector.



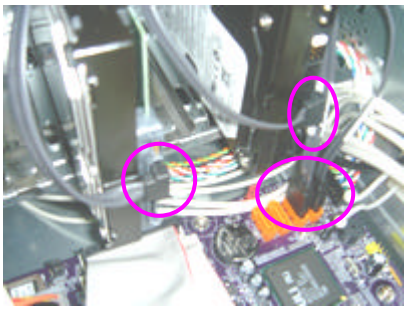
2. Connect the system fan power cable to the M/B Connector.



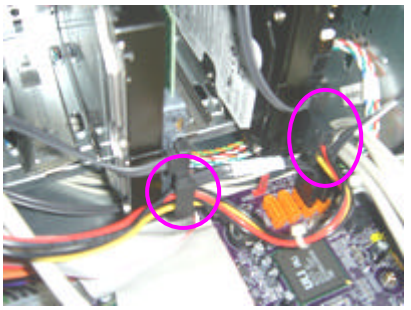
3. Connect the LED cable ASSY to the M/B Connector.



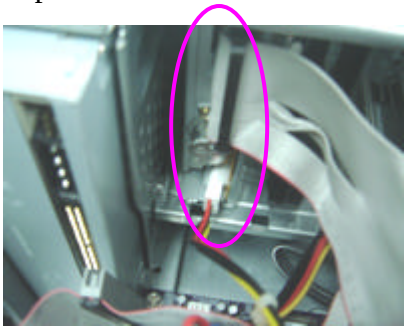
4. Connect the two HDD SATA cables to the HDDs and M/B connector.



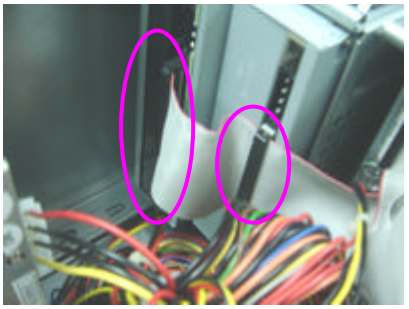
5. Connect the “PB” power cable to the master HDD, “PC” to the slave HDD.



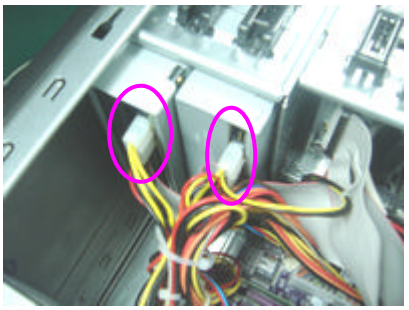
6. Connect the FDD data and power cable to the FDD.



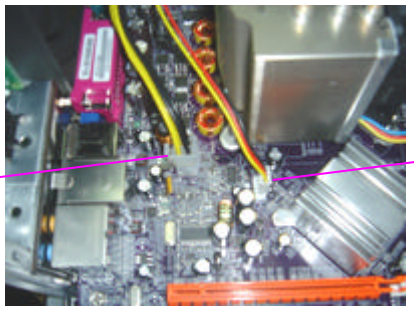
7. Connect the ODD IDE cable to the master & slave ODD.



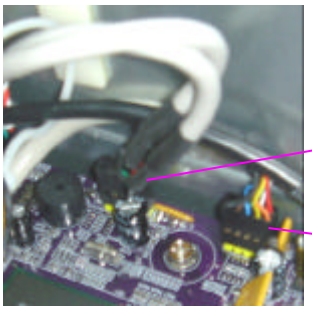
8. Connect the 4 Pin power cable “PE” to the master ODD, “PF” to the slave ODD.



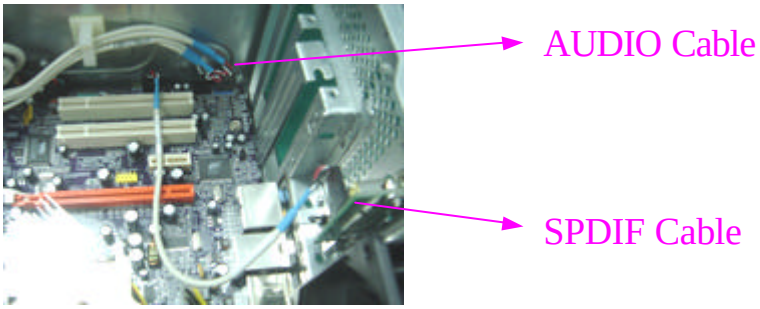
9. Connect 12V power cable “ PD” and CPU fan power cable to the M/B.



10. Connect the USB and Card-reader Cables.

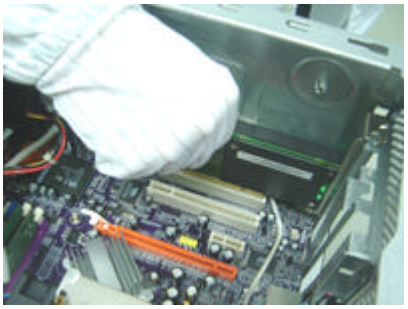


11. Connect the SPDIF and AUDIO cables.



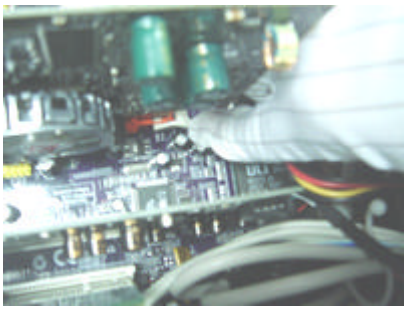
Install the ADD ON Cards

1. Insert the Modem Card into the PCI SLOT3.



2. Insert the TV Tuner Card into the PCI SLOT2.

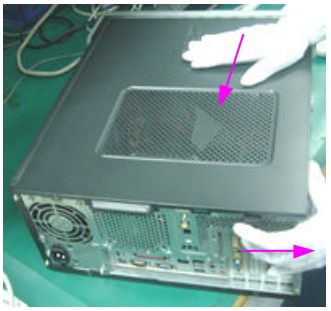
3. Insert the VGA Card into the PCI-E slot, then rail the latch on to hold it.



4. Fit the PCI-Lock into the chassis to lock the ADD ON cards.

Close the System

Place the side door back to the original position, then slide the Lock-handle back to fasten it.

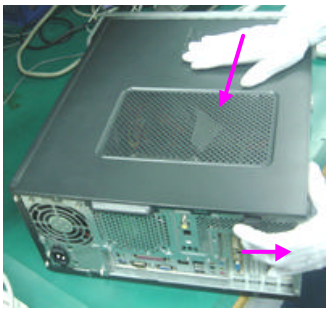


AcerPower F5 Standard Disassembly Procedure

Opening the System

1. Place the system unit on a flat, steady surface.

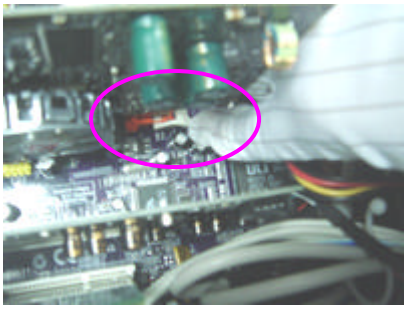
2. Turn the housing down, slide the Lock-handle as shown , meanwhile slide the left side door out .



Remove the ADD ON Cards

1. Release the PCI-Lock as shown bellow, then remove it.

2. Release the VGA-slot Lock shown bellow, then pull out the VGA Card.

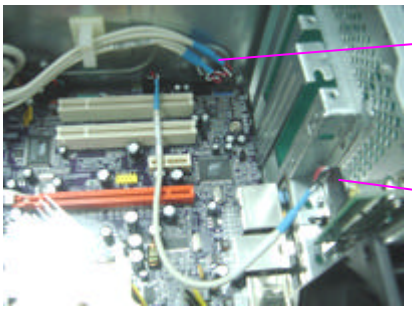


3. Remove the TV Tuner Card.

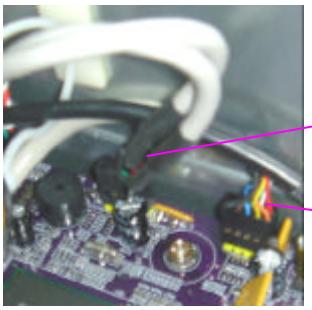
4. Remove the Modem card.

Remove the Cables

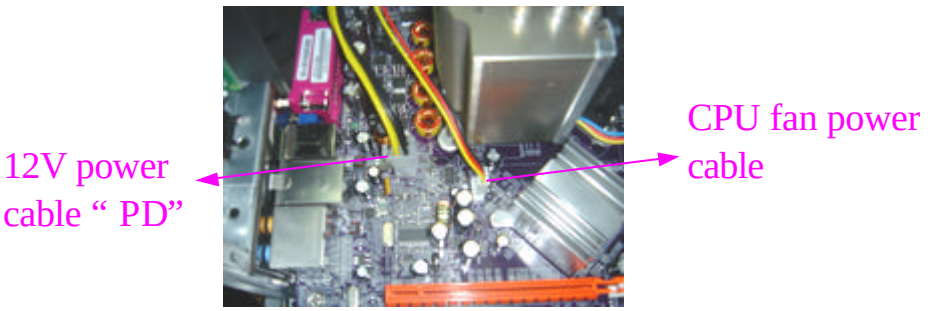
1. Disconnect the SPDIF and AUDIO cables.



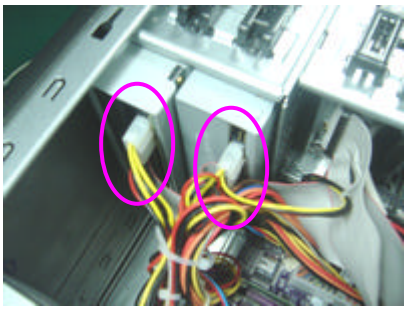
2. Disconnect the USB and Card-reader Cables.



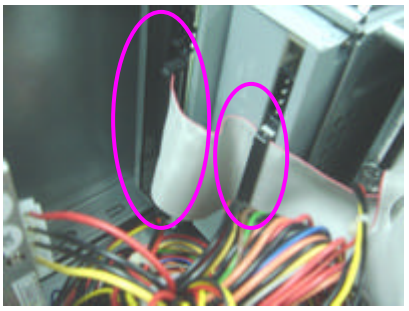
3. Disconnect 12V power cable “ PD” and CPU fan power cable from the M/B.



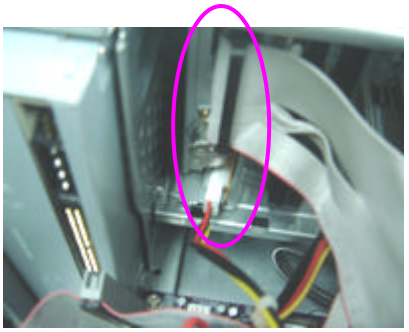
4. Disconnect the 4 Pin power cable “PE” from the master ODD, “PF” from the slave ODD.



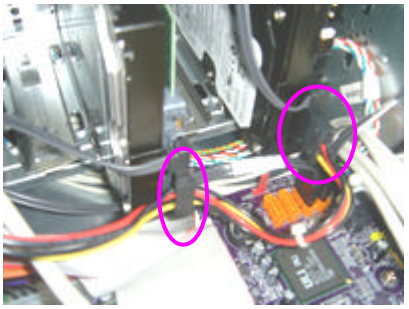
5. Disconnect the ODD IDE cable from the master & slave ODD.



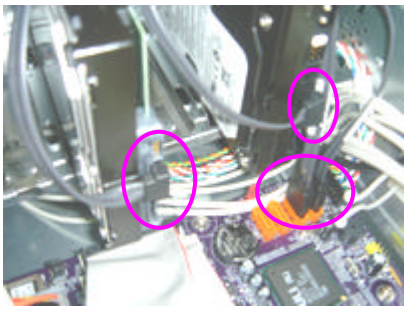
6. Disconnect the FDD data and power cable from the FDD.



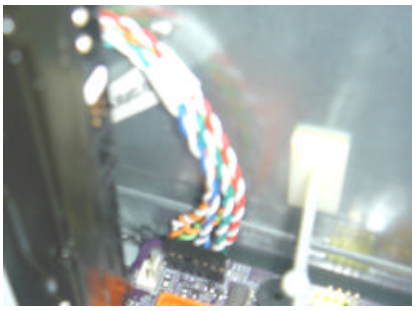
7. Disconnect the “PB” power cable from the master HDD, “PC” from the slave HDD.



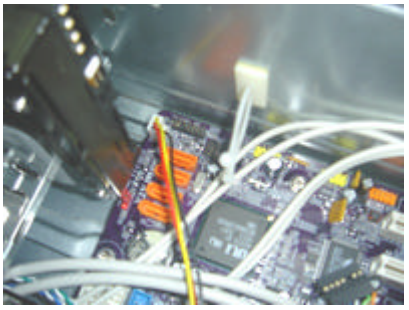
8. Disconnect the two HDD SATA cables from the HDDs and M/B connector.



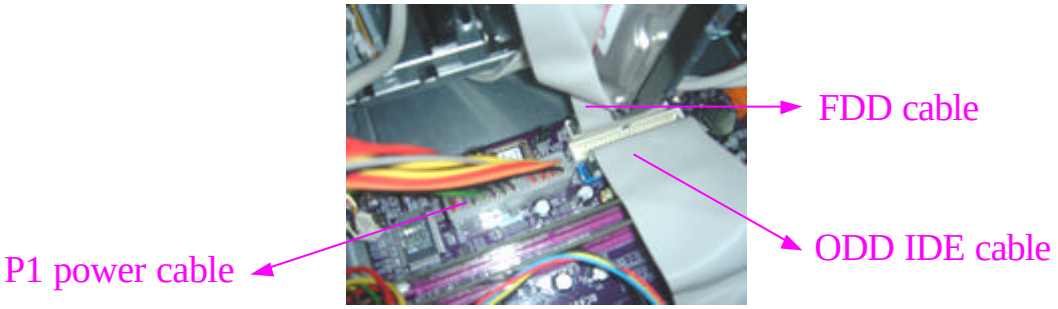
9. Disconnect the LED cable ASSY from the M/B Connector.



10. Disconnect the system fan power cable from the M/B Connector.

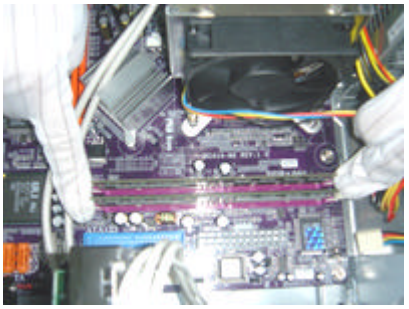


11. Disconnect the ODD&FDD IDE and P1 power cable from the M/B connector.



Remove the Memory

Loose the DIMM Latch and pop out the two memory shown bellow.



Remove the Heatsink module.

Loosen the four screws , then remove the Heatsink.

Remove the front bezel

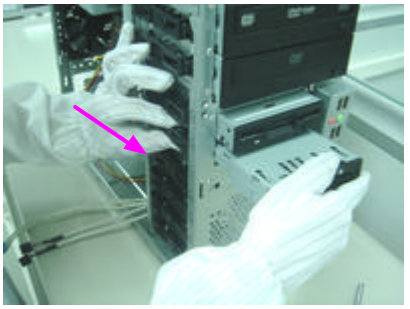
Release the three latches on the front bezel, then remove the front bezel.

Remove the CD-ROM, Floppy, Card-reader and HDD

1. Release the HDD-Holder, meanwhile pull the master HDD out of the chassis.

2. Release the HDD-Holder, meanwhile pull the slave HDD out of the chassis.

3. Release the FDD-Holder, meanwhile pull the Card-reader Module out of the chassis.



4. Release the FDD-Holder, meanwhile pull the Card-reader Module out of the chassis.

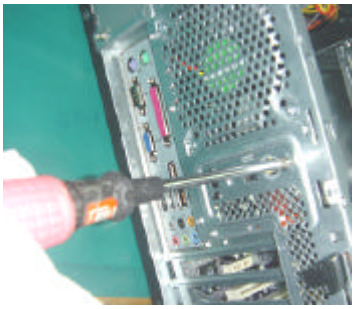
Release the ODD-Holder, meanwhile pull the Slave ODD out of the chassis, then the Master one.

Removing the USB Module

Remove the screw as shown bellow, detach the USB Module, then pull down the USB&Audio cable from the USB board.

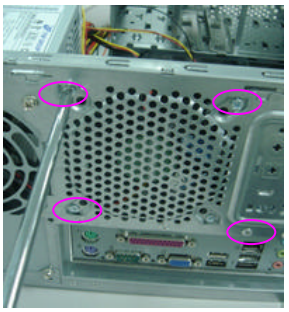
Removing the SPDIF Module

Remove the screw as shown bellow and remove it.



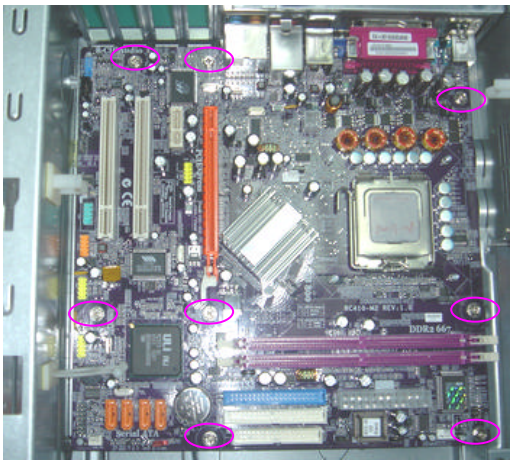
Remove the System Fan

Remove the four screws and remove the system fan shown bellow.



Remove the Mainboard

Remove the eight screws and remove the Mainboard shown bellow.



Remove the Power-supply

Remove the four screws shown bellow and remove the Power-supply.

AcerPower F5 Standard Reassembly Procedure

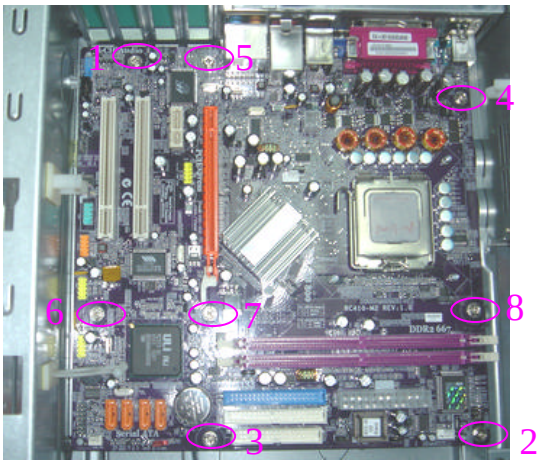
Install the Power-supply

Fit the Power-supply into the chassis, then fasten the four screws shown bellow.

Install the Mainboard

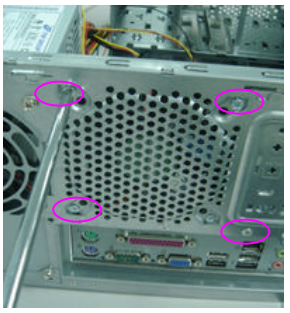
1.Put the M/B into the chassis aligning the I/O connector , make sure M/B VIA hole fits the oriented STAND OFF on the chassis.

2.Fix the M/B with 8pcs screws by turn of number in the picture.



Install the System Fan

Fit the System Fan into the chassis , then fasten the four screws shown bellow.



Install the SPDIF Module

Fit the SPDIF Module into the chassis and fasten the screw to fix it.

Install the USB Module

Lead the USB&AUDIO cables into the chassis, fit the USB Module onto the chassis, then tight the screw shown bellow.

Install the CD-ROM, Floppy, Card-reader Module and HDD

1.Install the master ODD into the first ODD location, then install the slave ODD into the second ODD location, and slide the lock handle the lock the ODDs.

2.Install the FDD into the first 3.25" location, and slide the lock handle the lock it.

3. Install the Card-reader Module (with cable) into the second 3.25" location, and slide the lock handle the lock it.

4. Install the slave HDD into the forth HDD location, then slide the lock handle the lock the HDD.

5. Install the master HDD into the second HDD location, then slide the lock handle the lock the HDD.

Install the front bezel

Lead the LED CABLE into the chassis hole, then fit the front bezel to the chassis.

Install the Heatsink module.

Fit the Heatsink onto the MB, then fasten the four screws shown bellow.

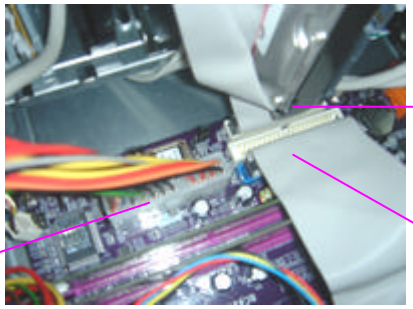
Install the Memory

1.Insert the memory1 into the DIMM SLOT1 shown here.

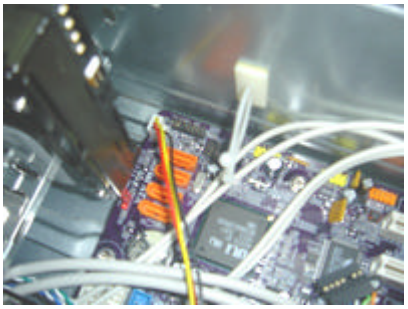
2.Insert the memory2 into the DIMM SLOT2 shown here.

Connect the Cables

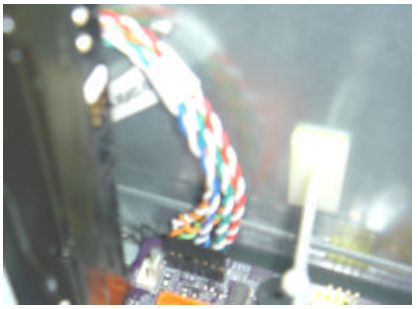
1. Connect the ODD&FDD IDE and P1 power cable to the M/B connector.



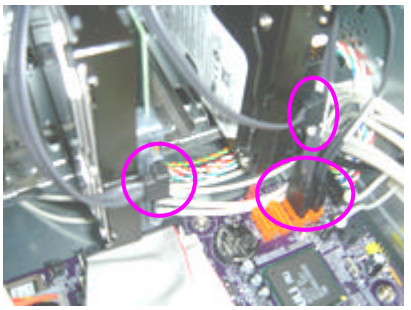
2. Connect the system fan power cable to the M/B Connector.



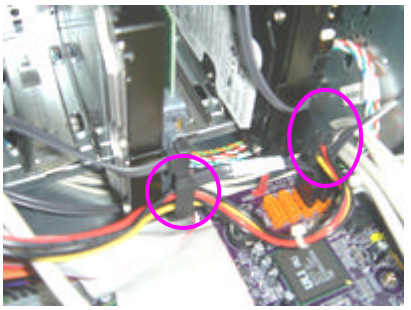
3. Connect the LED cable ASSY to the M/B Connector.



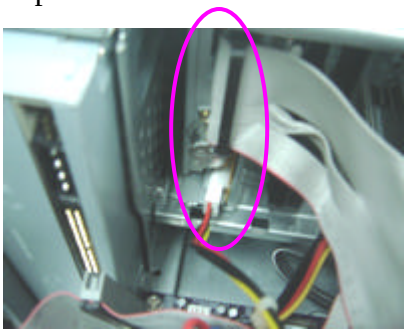
4. Connect the two HDD SATA cables to the HDDs and M/B connector.



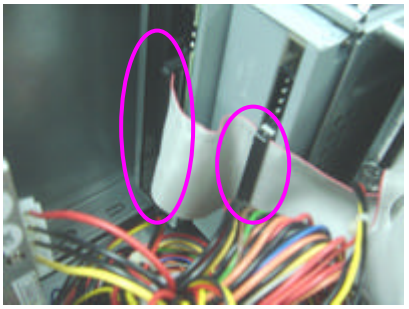
5. Connect the “PB” power cable to the master HDD, “PC” to the slave HDD.



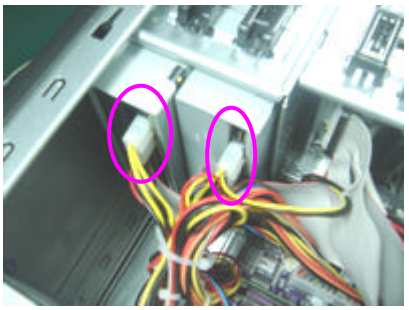
6. Connect the FDD data and power cable to the FDD.



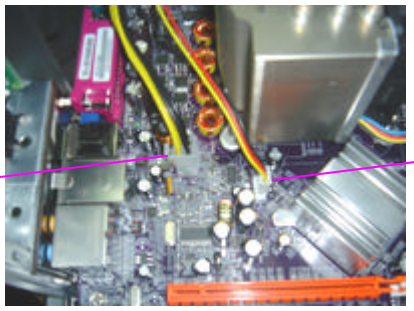
7. Connect the ODD IDE cable to the master & slave ODD.



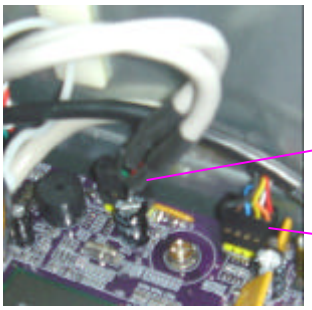
8. Connect the 4 Pin power cable “PE” to the master ODD, “PF” to the slave ODD.



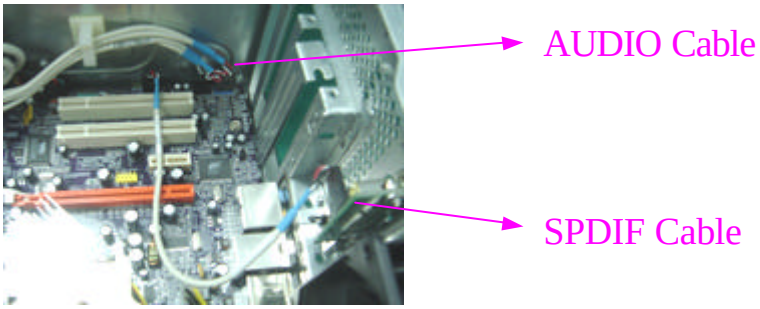
9. Connect 12V power cable “ PD” and CPU fan power cable to the M/B.



10. Connect the USB and Card-reader Cables.

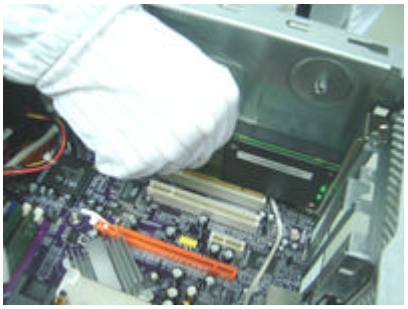


11. Connect the SPDIF and AUDIO cables.



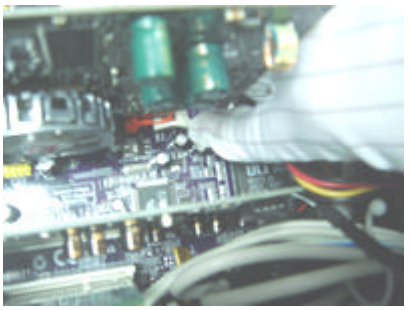
Install the ADD ON Cards

1. Insert the Modem Card into the PCI SLOT3.



2. Insert the TV Tuner Card into the PCI SLOT2.

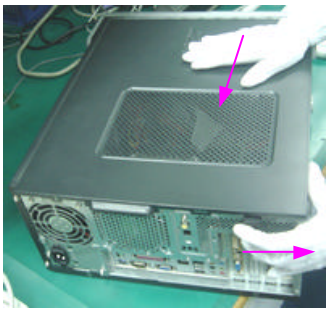
3. Insert the VGA Card into the PCI-E slot, then rail the latch on to hold it.



4. Fit the PCI-Lock into the chassis to lock the ADD ON cards.

Close the System

Place the side door back to the original position, then slide the Lock-handle back to fasten it.



FRU (Field Replaceable Unit) List

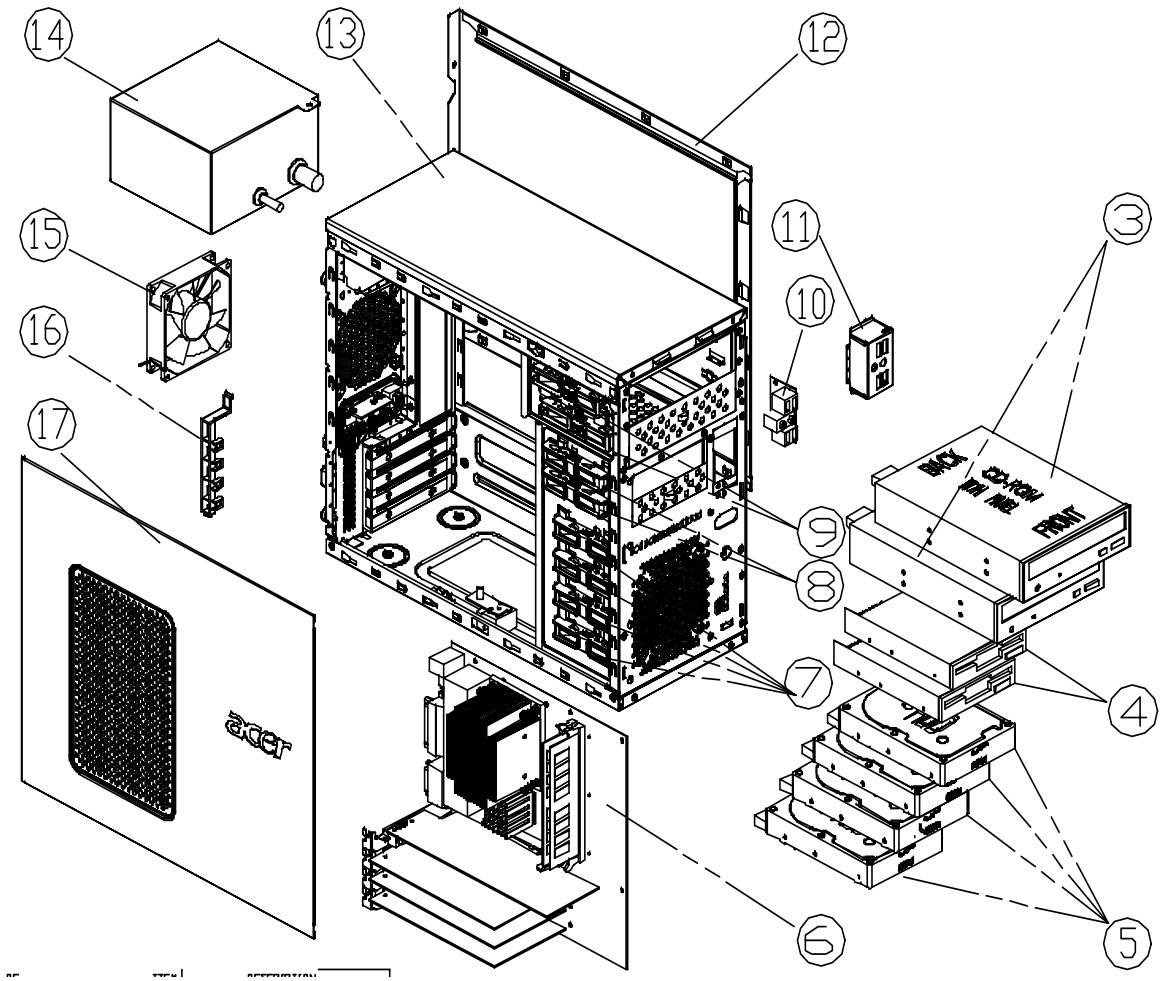
This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of Aspire T650/E500 and AcerPower F5. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

IMPORTANT: Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. For whatever reasons a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

IMPORTANT: Please note that Acer Corporation sells only the parts listed in the following table. Please be reminded that though some parts are disassembled in Chapter 3 for demonstration purpose, Acer Corporation does not provide these parts.

NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how best to dispose it, or follow the rules set by your regional Acer office on how to return it.You can access to the website for the latest Parts version http://aicsl.acer.com.tw/spl/

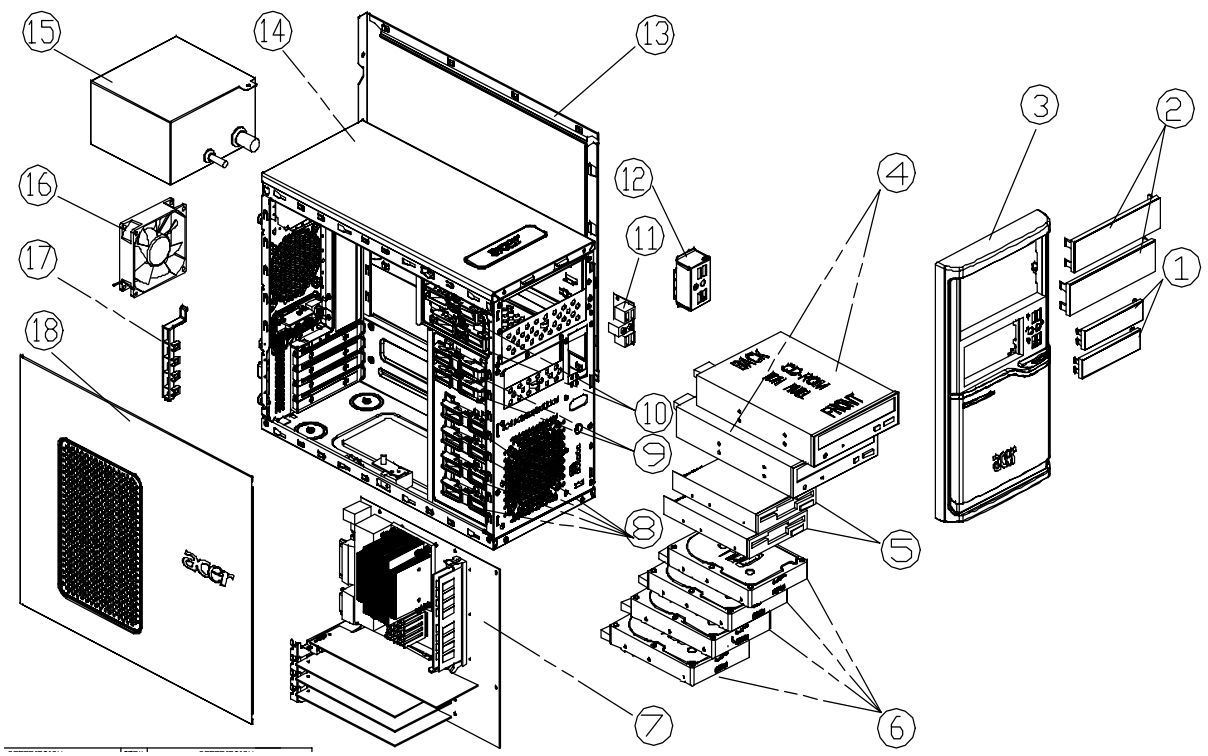
Aspire E500/T650 Exploded Diagram



Item	Description
3	OPTICAL DRIVE
4	FDD WITH PANEL
5	FLOPPY DISK DRIVE
6	MOTHER BOARD
7	HDD LOCK SLIDE
8	FDD LOCK SLIDE
9	CDROM LOCK SLIDE
10	USB BOARD
11	USB BKT
12	RIGHT COVER
13	CHASSIS
14	POWER SUPPLY
15	FAN

Item	Description
16	PCI BKT
17	LEFT COVER

AcerPower F5 Exploded Diagram



Item	Description
1	3.5” COVER
2	5.25” COVER
3	FRONT BEZEL
4	OPTICAL DRIVE
5	FDD WITH PANEL
6	FLOPPY DISK DRIVE
7	MOTHER BOARD
8	HDD LOCK SLIDE
9	FDD LOCK SLIDE
10	CDROM LOCK SLIDE
11	USB BOARD
12	USB BKT
13	RIGHT COVER
14	CHASSIS
15	POWER SUPPLY
16	FAN
17	PCI BKT
18	LEFT COVER